WATER RESOURCES

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HEARINGS

BEFORE THE

SELECT COMMITTEE ON NATIONAL WATER RESOURCES UNITED STATES SENATE

EIGHTY-SIXTH CONGRESS

FIRST SESSION

PURSUANT TO

S. Res. 48

LARAMIE, WYO., OCTOBER 8, 1959

PART 2

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(Pursuant to S. Res. 48, 86th Cong.)

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U.S. SENATE,
SELECT COMMITTEE ON NATIONAL WATER RESOURCES,
December 9, 1959.

Hon. ROBERT S. KERR,
Chairman, Select Committee on National Water Resources,
U.S. Senate, Washington, D.C.

DEAR SENATOR KERR: The decision of the Senate Select Committee on National Water Resources to act on my invitation to hold a hearing in Laramie was deeply appreciated. Your presence, Mr. Chairman, as well as that of Senators Kuchel and Young, made the occasion a significant one in the history of our State.

The people of Wyoming have always been and are certainly now interested in the future of their water resources. The record of accomplishment on the part of Wyoming water users gives eloquent testimony to the breadth of their vision where water development is concerned. This interest was further evidenced by the enthusiastic reception which the committee's coming evoked, and also by the extensive preparation which went into the many fine statements which were presented on the day of the hearing.

The purpose of this letter is to place emphasis upon a few of the points which seem to me to have been made forcefully by the various witnesses.

The first point, and certainly, it is not a new one, is that a large percentage of the water available in Wyoming must, if it is to be used, be conserved through storage. When we have worked out a multiple purpose water development program which will conserve even a small additional percentage of the water which falls upon Wyoming each year in the form of precipitation, we will have accomplished the first step toward the building of a more adequate economy for the State.

One of the resources which we have in great abundance in Wyoming is space. We have the room which is needed for America's burgeoning population and industry. We cannot use this room unless investments are made in water development because, after all water is the foundation, the gage, and the limit of any economy. It is common to speak of the amount of investment which is necessary to create a given number of jobs. We must also think of the amount of water which is necessary to create the number of jobs which will be needed for our young people during coming decades.

After studying the record of the testimony, it is apparent to me that Wyoming's future depends at least as much on development of water as upon the development of other mineral resources which may be extracted from Wyoming's soil. These mineral resources may be depleted some day even though they now exist in such vast quantities as to stagger the imagination. Wyoming's water resources renew themselves each year and, thus, an industrial system which makes the fullest possible use of water will make a more stable contribution to the State's economy in the long run.

Another broad area of concern which was touched upon by many witnesses in many ways during our Laramie hearing was the difficult task of allocating water resources. In the future there will be an increasing demand for this basic resource which even now is in short supply in many areas of our State. Without adequate development we in Wyoming are going to have to make some hard choices as to which of the many possible uses for our water resources will be favored. The point these witnesses were really making is that only a full development of our water, which is adequate to the needs of the number of people and of the industries which will inhabit Wyoming in 1980 and succeeding years, will solve this difficult allocation problem.

If we conserve our water and use it carefully and if we make use of the new supplies of water which modern technology is making available, we will have enough water in Wyoming.

If there is one point which emerges more strongly than any other from the testimony taken at this hearing, it is the determination of Wyoming's citizens that the necessary development will be undertaken. Local, State, and Federal governments have played their parts in the development which has brought us to our present situation. Each of these levels of government will contribute to the necessarily increased development of the future. The vital interest of all the people of the Nation in the development of western water resources will insure that this point pattern of water development continues. Wyomingites are also determined, however, that the proper relationship between the participants in this great endeavor be maintained. They believe that rights to the consumptive use of water conserved by Federal projects should be established pursuant to State law.

I would like to emphasize again, Mr. Chairman, that the citizens of Wyoming are grateful that this committee has included this survey of Wyoming water needs and preferences in the comprehensive record which it will use in advising Congress upon a national water policy. It seems to me that Wyoming has contributed much valuable and constructive information and that the committee's task when it is done will have been aided significantly in its accomplishments by this Wyoming hearing.

Sincerely yours,

GALE W. MCGEE, *U.S. Senator.*

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WATER RESOURCES

THURSDAY, OCTOBER 8, 1959

U.S. SENATE,
SELECT COMMITTEE ON NATIONAL WATER RESOURCES,
Laramie, Wyo.

The select committee met at 9 a.m., pursuant to Senate Resolution 48, in the East Ballroom, Student Union Building, Wyoming University, Senator Robert S. Kerr (chairman) presiding.

Present: Senators Kerr, McGee, Kuchel, and Young.

Present also: Theodore M. Schad, staff director of the select committee, and Paul McBride, chief clerk.

The CHAIRMAN. Good morning, ladies and gentlemen.

It is a great pleasure to open this, the second field hearing of the Select Committee on National Water Resources, here in Laramie, Wyo.

This committee is a little different from the regular standing committees of the U.S. Senate. Therefore, I would like to tell you about its formation and its mission, before proceeding with testimony.

The committee was established by Senate Resolution 48 in the 1st session of the 86th Congress, last April 20.

Membership was taken from the four standing committees of the Senate which have primary responsibilities in the water resources field, Public Works, Interior and Insular Affairs, Interstate and Foreign Commerce, and Agriculture and Forestry.

We have 17 members on this committee, all but 4 of whom are from the 17 Western States.

Our membership includes the chairman of the four standing committees which I have just mentioned.

This committee is a temporary one, which will make its studies, turn in its report, and cease to exist on January 31, 1961.

The committee is directed to make studies of water resources activities in the United States and make recommendations to the Senate as to the character and extent of projects and legislation that will be needed between now and 1980 to enable the Nation's needs for water for population, agriculture, and industry to be met.

Every year each of the standing committees handles a great deal of legislation relating to water resources and the Senate has been increasingly concerned over the ability of the Nation's water resources to meet all of the demands which will be made on them as our population continues to increase and our Nation continues to grow and expand.

We see our totalitarian rivals on the other side of the world committing increasing proportions of their annual budgets to developing their water resources, while in this country we debate over who should do what, and how much should be done.

In my mind there is a very serious question as to whether our present efforts in the field of water resources are adequate. In the past 50 years there have been more than 20 major reviews of the Nation's water resources by various commissions and committees of the executive and legislative branches of the Government trying to find the answers to what should be done. No less than seven of these have been within the past 10 years.

Many of these reports have not had the publicity and reception by the people that we believe would have been to the best service of the people.

They have not gotten through, as it were, to the people in such a way as to give them the information which, in our judgment, would bring about the necessary effort on our part to meet our growing demands for water.

It is too early to give any hint of what the Select Committee on National Water Resources will accomplish, as our work is just off to a good start. However, it is already evident to me that with the wonderful cooperation that has been given us by the many States and Federal agencies upon whom we have made demands for information, it is inevitable that this committee will be able to present the Nation's water problems in such a way that the American people will unite, and fortified with the information we expect to develop, demand the action necessary to meet our problem.

The committee is very fortunate to have as one of its members your own Senator Gale McGee, one of the newest Members of the Senate, who has taken care of the arrangements for this meeting.

It has been my honor and pleasure to serve in the U.S. Senate now 11 years, during most of which time your distinguished Senator O'Mahoney has been there, one of the ablest men in that body.

Senator McGee is one of the ablest of the new men that have come there. He is tremendously interested in the development of the water resources of Wyoming. He feels, as does each member of this committee, that in our service on this committee we not only serve the Nation, but have a better opportunity to serve our respective States, because after all, each State will be permitted to participate only in the resources development program which is provided for the entire Nation. I knew in accepting my place on this committee and the position of its chairman that I felt it would render a great service to our country but I would not be entirely frank if I did not say to you that I wanted it also to develop and bring about the development of the water resources of my own area and my own State. And that, I know, is the position of your own distinguished junior Senator—senior—which are you now?

Senator McGee. Junior.

The Chairman. Joe is still the senior Senator and properly so.

Senator McGee. That is correct.

The Chairman. Wherever Senator McGee sits, it is at the head of the table and that is true with Senator O'Mahoney.

I know your Senator McGee has the same feeling for the water resources of Wyoming as each of the other members has with reference to water resources development in his State.

I now call on Senator McGee for any information he wishes to make and to introduce the witnesses he has scheduled to appear before the committee.

STATEMENT OF HON. GALE W. McGEE, U.S. SENATOR FROM THE STATE OF WYOMING

Senator McGEE. Thank you, Mr. Chairman.

First of all, I want to thank you and the members of this committee for being willing to take the time from extremely busy schedules to join us here in Wyoming, hear our many views, and consider the many facets bearing upon the water problems of Wyoming. We think that Wyoming water questions are quite typical in some ways of the high mountain West. We would hope, therefore, that they would serve as some guidance in a broad assault on those problems clear across the West.

And I think the presence of both political parties on our panel here this morning makes one of the most eloquent points that all of us should be aware of when we are worrying about resource development and about the full utilization of our water capabilities and that is that these programs and these developments can bear no party label, that they can't be restricted by a party line.

No two men that I know have a greater knowledge of the West and the need for water in the development of the West than Senator Milt Young from North Dakota and Senator Tom Kuchel from California.

That is the reason that we are especially delighted to bring this community of response, Senatewise, into contact with the performance of interest which you all have displayed here this morning.

May I say to my colleagues that there are many people out there in the audience who have traveled several hundred miles to be here today, some of them to testify, some of them only to listen and observe. But they reflect the innumerable crosscurrents of interest and the depth of concern over water development in Wyoming.

This is a historical thing. It is a present thing. But our greatest concern here in the West is what is going to happen tomorrow. Water for the green grass of Wyoming is our historic base. Water for our irrigation, the development of our farming communities followed soon thereafter. Water for industrial development in limited areas of the State then followed. All of this involved people. It has meant recreational opportunities unequaled anywhere in the country. And it brings into focus now a new concern of a national sort. We think Wyoming and much of the West fits into the national and even the international picture.

I was moved by a speech that I heard night before last in Bismarck, N. Dak., by Senator Kerr, the chairman of this committee, in which he reminded the people that the Russians have already declared war through resource development, they have already declared war through economic expansion and that this may indeed be the real war in which we will find ourselves and already find ourselves locked with these rivals behind the Iron Curtain, and that the West offers us the greatest armament in such a conflict. Nowhere in the West is that armament more abundantly in evidence than in the untapped resources here in our State. Bentonite, oil and gas, uranium, all other minerals that we have in sight, proved reserves, speculative reserves and those that are yet unlocated only because so far their exploitation has been financially unattractive, point up a real potential beneath the surface

of this State. This is the reason many of us believe that one of the new frontiers in water study, one of the new concerns in water development programs is to try to get a national program launched, a national concept of the dispersion of industry and population as a broadened economic base to encourage diversification and as a broadened and spread out industrial base for security reasons.

The Russians are spending a great deal of time and money redeveloping their industrial patterns in regions of the Soviet Union never before thought to be economically feasible. The rate of change around the world and the horrendous and terrifying prospect of nuclear war has prompted a new set of values to be brought into the judgment of what is economically feasible. There are many of us who feel that this point has been reached in our own country and that we in the West bring to America with our people and with our mineral deposits, with our great land richness and our water a new resource, which is sheer space. I am talking about the wide open spaces of the West. It is our judgment that with careful study and the wisdom that we hope all of us together can command that we can broaden America's defensive base and open up her field of economic opportunity by developing constructively the combination of resources and industrial potential in the West.

The limitation of the financial unattractiveness of some of these endeavors in the past may require a new alinement of forces and a reassessment in attempting to keep it in focus with national needs. But it is these elements, the dispersal of people, the dispersal of industry, and the production of adequate resources, both human and material, to meet the Nation's future needs that provoke this hearing this morning, that bring out so many of the wonderful people of Wyoming to try to get at some of the basic questions in water resource development.

It is with that in mind that we proceed, then, Mr. Chairman, to the many witnesses that we have.

Now, in the interest of making sure that we get all of the points across, that we get all of the angles of opinion represented and confined as we are within the limits of 1 day—the wheels go up what time for Billings, Mr. Chairman? Four o'clock?

The CHAIRMAN. We have to leave the airport not later than 4 o'clock.

Senator MCGEE. It will require in most instances that each witness try to supply to us orally in an informal way the real nub of his particular representation. Then the full statement, the extended materials for any individual or any group will be included in the record as though delivered. Thus there is no penalty attached and the legislation that may be forthcoming from this. The programs that may be laid out because of it will all result from the mining of the record. That is the important place to get the supporting information and the other details that will shore up each position on these water issues.

(A prepared statement of Senator McGee follows:)

STATEMENT OF SENATOR GALE MCGEE

Wyoming is a State which is extraordinarily rich in mineral resources. Within its borders it contains very significant supplies of uranium ore, bentonite, and trona, to mention just a few. Perhaps Wyoming's most important min-

eral resources, however, are oil, gas, and coal. In each of these vital fuels, our State ranks among the richest in recoverable reserves.

Wyoming is also one of the few Western States which has an abundant supply of water. There are large areas of the State which now suffer from water shortages, but this paradoxical result occurs because we are not making adequate use of the water that is available.

I have cited these striking facts to demonstrate that Wyoming has natural attributes which make it desirable for industry to be located within its borders. We know that many communities in the State are now suffering from inadequate water supplies and that other Wyoming communities which have adequate water supplies are faced with the fact that most of their water is of a dubious quality. The population potential of the State is limited at the present level of water resource development.

We know that the Soviet Union has for more than two decades been engaged in a program of industrial dispersion. They have moved much of their heavy industry to new cities, erected or expanded behind the Urals. Obviously, a wide geographical dispersion of industrial facilities gives a nation a better chance to survive if the awful prospect of nuclear war turns into reality. This Soviet policy antedated the dawn of the nuclear age, but it has been proven to be one of the most important aspects of the Soviet defensive strategy since the days in 1945 when atom bombs fell on Nagasaki and Hiroshima.

In the United States, we have always depended upon the Northeast and the Middle West as the centers of industrial and manufacturing development. In recent decades there has been a partial dispersion of American industry with the growth of great aircraft manufacturing plants on the west coast, with the transference of textile manufacturing from New England to the South, and with the shifting of many small manufacturing firms to relatively remote areas. These developments, however, have not been undertaken for defensive reasons; they seem to have been natural concomitants of the evolution of our economic system.

The America of the future must face the grim facts of national life in the nuclear age. One of these facts is that the tremendous concentration of population and industry in the Northeastern and Middle Western areas of our Nation makes us much more vulnerable than we need to be to nuclear or missile attack. In Wyoming we believe that if our water resources are developed in a manner which is commensurate with our industrial and population potential, we can make a much more significant contribution to the necessary dispersion than now seems possible. We all believe in Wyoming's economic future, but we know that without the development of our water resources, the Nation will not only be poorer because our other bounteous mineral resources will be more difficult to develop, but it will also be less safe because we are not making use of the one great natural resources which I have not yet mentioned. That resource is space.

The Majority Leader of the United States Senate, Senator Lyndon B. Johnson, of Texas, has speculated that Wyoming could support a population of 20 million. We know that there are many nations on the earth which are much less liberally endowed with resources and with water than is Wyoming, and which now support very large populations. If America is to prove her flexibility to the hard demands of a perilous future, she must and she will change. The development of Wyoming's water resources is an investment in that future and will make it possible for the Nation to use that resource which we have in greatest abundance: Space!

Senator McGee. Our first witness will be entitled to a little more time inasmuch as he is serving here in two capacities today. I refer to Mr. Earl Lloyd, State engineer.

Mr. Lloyd is speaking not only as one of the greatest water experts in this region in his own right, the lifetime devoted to concern on that, but he is also here representing Governor Hickey, who because of illness was unable to be here in person.

Mr. Lloyd, we welcome you to open the hearings.

STATEMENT OF EARL LLOYD, STATE ENGINEER, REPRESENTING GOV. J. J. HICKEY

Mr. LLOYD. Thank you, Senator McGee.

Senator McGee, Senator Kerr, Senator Kuchel, and Senator Young: Governor Hickey has asked me to express to you and the other members of the Senate select committee his sincere regret that he is unable to be present today and welcome you to the State of Wyoming and to Laramie.

As you no doubt have heard, Governor Hickey has recently undergone a major surgical operation. Though he has been released from the hospital, he is confined to his home under doctor's orders.

As his representative on this occasion I wish at this time to extend to you a hearty welcome to Wyoming and to assure you of his great interest in the problems connected with the use and development of our water resources.

Those are the resources with which this committee is deeply concerned. I know that the citizens of Wyoming very much appreciate the opportunity to appear before your committee here in Laramie and express their interest and opinions concerning the future use and development of the Nation's water resources. We in the semi-arid States of the West know it is our most important resource.

Again we thank you for this opportunity to appear before you here in our home State.

The CHAIRMAN. I have a letter here from the Governor of the State of Wyoming, who encloses his statement.

It will be made a part of the record at this point.

(The letter and statement referred to follow:)

SEPTEMBER 28, 1959.

The Honorable ROBERT S. KERR,
Chairman, Select Committee on National Water Resources,
U.S. Senate, Washington, D.C.

DEAR SENATOR KERR: I am enclosing a statement of views and summary of Wyoming's water resources for the Senate Select Committee on National Water Resources as requested in your letter of June 23d in which you established a deadline of October 1.

With every good wish.

Sincerely yours,

J. J. "JOE" HICKEY, *Governor.*

STATEMENT OF VIEWS AND SUMMARY OF WYOMING'S WATER RESOURCES

Wyoming, from the time of its designation as a territory, has realized the value of its water resources and when it became a State in 1890, the constitutional convention and the first State legislature was fully aware of those values and wrote into our Constitution and laws a code for the use, control and distribution of the waters of this State. In the preparation of this water code, they were fortunate to have had the very able counsel and assistance of Elwood Mead, then Territorial engineer, later the first State engineer, who many years later also served as Commissioner of Reclamation.

Conservation and use of water for irrigation is of the greatest importance in this State and irrigation of agricultural lands has been practiced since the time it was first settled by the early pioneers. This development of irrigation in Wyoming has proceeded by individual farmers and ranchers, partnerships, ditch companies and irrigation districts. In 1904, the Reclamation Service, now the Bureau of Reclamation, entered the area and started construction of the larger projects such as the Shoshone project and the North Platte project.

The State of Wyoming, you will note, is situated on the headwaters of four of the major river basins of the Western United States. Water leaving the

State flows to the Pacific Ocean, the Great Salt Lake, the Gulf of California, and into the Gulf of Mexico.

About 75.6 percent, or 73,680 square miles, of the area of Wyoming lies in the drainage basin of the Missouri River. This area is drained by the Yellowstone River, the Clarks Fork of the Yellowstone, the Big Horn River, the Tongue and Powder Rivers in the vicinity of Sheridan and Buffalo; the Little Missouri River and the Belle Fourche River in the northeastern part of the State; the Cheyenne River and Niobrara River in the east central part; and the North Platte River, which largely drains the southeast part of Wyoming. A small area around Cheyenne and southeast of Laramie contributes to the flow of the South Platte River.

The Green River and the Little Snake River in southwestern Wyoming are on the headwaters of the Colorado River drainage basin, which covers 17.5 percent, or more than 17,000 square miles, of the State's area. The runoff of these streams constitutes our contribution to the Colorado River.

The Bear River in southwestern Wyoming wanders from Utah to Wyoming, then back into Utah, then back again to Wyoming, and then at border leaves Wyoming to flow through southeastern Idaho back again to Utah and into the Great Salt Lake. This river basin includes 1.5 percent, or 1,490 square miles, of the area of Wyoming.

Snake River in Jackson Hole and Salt River in Star Valley join to flow westerly across Idaho into the Columbia River. This drainage basin covers about 5.4 percent, or 5,256 square miles, of the State.

In quantity of stream flow, Snake River is Wyoming's largest river, with the Wyoming area contributing a flow of about 5 million acre-feet of water annually. This water comes from the runoff of the high mountains of the Jackson Hole and Star Valley areas. Yellowstone River, as it leaves Yellowstone National Park, has an average annual flow of over 2 million acre-feet. The Big Horn River, as it flows north into Montana has an average annual discharge of about 2,400,000 acre-feet. Green River, where it leaves Wyoming, has a normal yearly runoff (25-year period, 1921–45, defined as normal) of about 1,426,000 acre-feet and the North Platte River at the Nebraska-Wyoming State line has an annual flow of about 1,600,000 acre-feet, exclusive of amounts crossing the line in canals of North Platte project.

Wyoming streams produce a mean annual runoff of about 15 million acre-feet and at the present time it is estimated that we are depleting this supply by about 2,500,000 acre-feet by using and reusing this water for beneficial uses. With more complete development, this consumptive use will probably be increased to about 4 million acre-feet. Adjoining States have established some equities in this water and on several streams we are limited either by court decrees or by compacts in the amount we can utilize.

The average annual water supply does not present a complete picture for the conservation and development problems since there are wide variations in yearly flows and in seasonal flows. Adequate storage facilities must be provided to carry over water from years of high runoff to years of low runoff and also from the periods of heavy spring flows so as to make water available late in the irrigation season and for municipal and industrial use during the entire year. The flow must be leveled out to make it available when needed.

The greatest water use in Wyoming today is for irrigation purposes and we are actually irrigating about 1,700,000 acres of land. The acreage having adjudicated water rights totals about 2,750,000 acres. Hydroelectric power is produced principally by release of water stored for irrigation use.

Although the major irrigation and hydroelectric power projects in our State have been constructed by the Bureau of Reclamation, they constitute only about 300,000 acres of the total lands irrigated. Individuals and private enterprise have developed over 1,100,000 acres and companies which operated under the Carey Act, some 200,000 acres. Some 30,000 acres have been developed by the U.S. Indian Service.

In addition to the surface water resources in Wyoming, it has been found from investigation and development that there is a very considerable ground water resource, the full potential of which is to a large extent undetermined. Under a dollar-for-dollar cooperative program with the U.S. Geological Survey, the State engineer's office, since about 1940 (and more recently the natural resource board), has carried on investigaitons and studies of ground water resources in Wyoming, principally in the southeastern part of the State, with some less detailed investigations in other areas.

Greatest development up to the present time has occurred in the Pine Bluffs area of eastern Laramie County and in the Cheyenne area. About 15,000 acres of land has been irrigated from wells in the Pine Bluffs-Carpenter area. The city of Cheyenne has, during the last few years, deevloped the greatest part of its municipal supply from wells in the area west and northwest of the city. Investigations have shown that a large quantity of ground water can be developed along the North Platte River Valley in the areas near Torrington and Lingle. A number of deeper wells in the Wheatland area have also been very successful but are quite expensive to drill and equip. Such water supplies in the Wheatland area are supplemental to the Wheatland project. Studies have also been carried on in other parts of the State and some areas give considerable promise.

FEDERALLY CONSTRUCTED PROJECTS

Federal projects constructed in Wyoming by the Bureau of Reclamation began with the construction of the Shoshone project near Cody and Powell. This project was originally proposed by Col. W. F. Cody ("Buffalo Bill") and Nate Salsbury in 1899, but they ran into difficulties in financing it. The project was authorized on February 10, 1904, and construction began in May of that year. Since that time, additional units or divisions have been added from time to time and further extensions are proposed for the future. It now consists of the Buffalo Bill Dam and powerplant in the Shoshone River Canyon west of Cody, Wyo. The reservoir has a present capacity of 439,850 acre-feet and the powerplant an installed capacity of 5,600 kw., a 5,000-kw. power installation at the Heart Mountain plant, the small Ralston Reservoir, the Garland, Frannie, Willwood, and Heart Mountain Canals and distribution systems for the irrigation of 96,000 acres of land.

Construction of the Riverton project on the ceded portion of the Wind River Indian Reservation was started in 1920. Wind River and its tributaries provide the water supply and storage is provided to a capacity of 152,000 acre-feet at the Bull Lake Reservoir on Bull Lake Creek and at Pilot Butte Reservoir, an offstream reservoir with capacity of 36,960 acre-feet. The Wyoming Canal diverts at the Wind River Diversion Dam for the irrigation of about 100,000 acres of land north and east of Riverton. An 1,800 kw. powerplant is installed at Pilot Butte Reservoir and the Pilot Canal diverts at that point.

Boysen Dam at the head of Wind River Canyon was completed in 1952 and creates a reservoir with a capacity of 820,000 acre-feet at the normal operating pool with superstorage of 673,000 acre-feet for control of floods. A powerplant with installed capacity of 15,000 kw. is located at the dam. Regulating the flow of the river will provide additional irrigation development both upstream and downstream. In addition, Boysen Reservoir reduces flood flows to safe channel capacity, retains a large volume of silt, provides a great improvement in fish and wildlife habitat and makes possible expansion of recreational opportunities.

The Hanover-Bluff unit provides for the irrigation of 7,400 acres of new land in the vicinity of Worland, Wyo., by enlarging the upper part of the existing Upper Hanover and Bluff Canals from the Big Horn River and installations of pumping plants to cover lands above those canals.

Owl Creek unit consists of the completed Lucerne pumping plant on the Big Horn River north of Thermopolis, Wyo., and the Anchor Reservoir on the south fork of Owl Creek, now under construction. The purpose of this development is to provide supplemental water to some 18,000 acres of presently irrigated lands.

The North Patte River is probably the most completely regulated stream in the United States and on this stream the Federal projects consist of the North Platte project and the Kendrick project. The North Platte project includes Pathfinder Reservoir, completed in 1909, with a capacity of 1,045,000 acre-feet, the Guernsey Reservoir, completed in 1927 with a present capacity of about 45,000 acre-feet, Lake Alice and Lake Minitare along the Interstate Canal in Nebraska, the Whalen Diversion Dam and the Interstate, Fort Laramie and Northport Canals. The project provides for the irrigation of approximately 70,000 acres of land in Wyoming and 170,000 acres in Nebraska, in addition to furnishing storage water under Warren Act contracts to a large acreage in both States. A powerplant of 4,800 kw. is installed at the Guernsey Dam and there also is a small plant near Lingle.

The Kendrick project includes Seminoe Reservoir on the North Platte River with a capacity of 1,012,000 acre-feet, the Alcova Reservoir with a capacity of 190,500 acre-feet and the Casper Canal diverting from the Alcova Reservoir. A 32,400 kw. electric powerplant is installed at the Seminoe Dam and a recently completed powerplant at the Alcova Dam has an installed capacity of 36,000 kw. On this project, water must be carried over from years of high runoff to provide a dependable supply. About 18,000 acres are now irrigated.

Under the Missouri River Basin project, the first unit completed was the Kortes Dam and powerplant of 36,000 kw. capacity located on the North Platte River between Seminoe and Pathfinder Reservoirs. Storage capacity is only 4,800 acre-feet. This powerplant utilizes storage release from Seminoe Reservoir which is in part recaptured at Pathfinder.

Recently completed under the Missouri Basin project is the Glendo Dam on the North Platte River near the town of Glendo, which creates a reservoir of 800,000 acre-feet capacity of which 100,000 acre-feet is for irrigation storage, 275,000 acre-feet of flood control capacity, 115,000 acre-feet for sediment control, and 310,000 acre-feet for power storage and reregulation. Included in this unit is the Fremont Canyon powerplant, now under construction, to utilize the power head available at Pathfinder Reservoir and that in the river above the high-water line of Alcova Reservoir by the installation of a powerplant of 48,000 kw. capacity. The powerplant at Glendo Dam will develop about 24,000 kw. of power and will be operated principally during the irrigation season. The purpose of Glendo Dam is the reregulation of upstream storage releases, flood control, sediment control, supplemental irrigation and benefits to recreation and sanitation by allowing a more uniform year-round stream flow in the section of the river from Alcova to Glendo.

Construction is about to start on the Gray Reef Dam, located a short distance below Alcova, to reregulate the power releases at Alcova to a uniform flow necessary for irrigation, pollution control, and fish and wild fowl.

In addition, the Bureau of Reclamation has constructed the Keyhole Dam on the Belle Fourche River near Moorcroft, Wyo., with a capacity of 340,000 acre-feet, of which 140,000 acre-feet is for flood control and 130,000 acre-feet for irrigation purposes. This is principally for supplemental supply for the Belle Fourche project in South Dakota.

Another bureau project is the reconstruction and enlargement of the Eden project in northwestern Sweetwater County to eventually irrigate 20,200 acres of land and construction of the Big Sandy Reservoir on the Big Sandy River to a capacity of 39,700 acre-feet.

Construction is underway on the Flaming Gorge Dam on the Green River in Utah, which will back up water nearly to the city of Green River, Wyo. This is one of the units of the upper Colorado River storage project, and among other benefits will provide power revenues for further Wyoming irrigation development and make possible great recreational development of the area.

Jackson Lake Dam and Reservoir on the Snake River, about 25 miles north of Jackson, Wyo., was constructed by the Bureau of Reclamation under agreements with the Minidoka project in Idaho. The reservoir has a capacity of 847,000 acre-feet.

Several potential projects of the bureau in Wyoming are the Seedskadee project, Lyman project, LaBarge project, Sublette project, Little Snake-Savery project, and Opal project in the Upper Colorado River Basin; the Shoshone extensions unit in the Big Horn River Basin; the Woodruff Narrows Reservoir on Bear River; the Upper Star Valley project in Star Valley; the Sheridan Canal project on Tongue River; the Kaycee, Piney, French Creek, Buffalo, Ucross, and Crazy Woman units in the Powder River area.

Among the projects developed by the Federal agencies are the many ditches and some small reservoirs constructed by the U.S. Indian Service on the Wind River Indian Reservation.

FLOOD CONTROL IN WYOMING

Flood damage in Wyoming has not been on such an extensive scale as in many other parts of the United States and irrigation reservoirs have fairly well controlled many of our streams. There have been many local floods caused by cloudbursts, which are difficult to foresee or guard against.

Up to this time, what might be called direct flood control projects in Wyoming on any extensive scale have consisted principally of providing flood control storage capacity at Boysen, Glendo, and Keyhole Dams and the construction of levees and revetments along the Snake River near Wilson and the Big Horn River at Greybull with some work done on channel improvement of the Shoshone River near its mouth. Irrigation reservoirs have fairly well controlled the North Platte River and many of our other streams.

The 1944 Flood Control Act assigned to the Corps of Engineers, U.S. Army, the responsibility of prescribing regulations for the use of storage capacity allocated to flood control at reservoirs constructed wholly or in part with Federal funds. It further provided that the corps should have the responsibility of determining flood control capacities in all reservoirs included in the comprehensive plan for the Missouri River Basin development. In addition, the Corps of Engineers is authorized by law to perform emergency operations and make flood control investigations.

Such emergency operations have been carried on along the Snake River in Jackson Hole in the vicinity of Wilson and to some extent at Greybull on the Big Horn River. Flood control works on the Snake River were authorized by the Flood Control Act of 1950. These will consist of reveted levees on about 18 miles of the river at a cost of about $2,700,000.

In addition to this, five local flood-protective projects have been authorized for construction at locations that have suffered damaging floods in the past. These are at Greybull, on the Big Horn River, where severe ice jam floods and floodflows have occurred; on Clear Creek at Buffalo; on Big and Little Goose Creeks at Sheridan; at Dayton on Tongue River, and Monarch on Tongue River.

NONFEDERALLY CONSTRUCTED PROJECTS

The non-Federal developments consist of thousands of ditches, canals, pipelines, and small reservoirs, along practically all the streams in Wyoming. Some of the principal projects in this category are listed below:

CANALS

Lakeview Canal	South Fork Shoshone River.
Cody Canal	Do.
Lovell Canal	Shoshone River.
Sidon Canal	Do.
Emblem Bench Canal	Greybull River.
Farmers Canal	Do.
Big Horn Canal	Big Horn River.
Upper Hanover Canal	Do.
Lower Hanover Canal	Do.
Bluff Canal	Do.
Kirby Canal	Do.
Cyclone Ditch	Do.
Wyoming No. 2 Canal	Do.
LeClair-Riverton Canal	Do.
Big Goose and Beaver Canal	West Fork Big Goose Creek.
Peralta Ditch	Little Goose Creek.
Colorado Colony Ditch	Do.
Prairie Dog Water Supply Co. Canal	North and South Piney Creeks.
Douglas Canal	North Platte River.
Lucerne Canal	Do.
North Platte Canal	Do.
Torrington Canal	Do.
Rock Ranch Canal	Do.
Hawk Springs Canal	Horse Creek.
Goshen Hole Canal	Do.
Goshen Canal	Do.
Wheatland Nos. 1 and 2 Canals	Laramie River and Sybille Creek.
Pioneer Canal	Laramie River.
Oasis Canal	Do.
Boughton Canal	Do.
Mesa Irrigation Canal	Savery Creek.
West Side Canal	Little Snake River.
First Mesa Canal	Do.
Bosler Canal	Rock Creek.
Canyon Canal	Do.
Table Land Canal	Medicine Bow River.
Haglund Canal	Do.
Paradise Canal	West Fork New Fork River.
Canyon Canal	Green River.
Boulder Canal	Boulder Creek.
Highland Canal	Willow Creek.
Apex Canal	Green River.
Jenkins Canal	West Fork New Fork River.
Bear Canal	Bear River.
Hilliard Canal	Do.
B.Q. Canals	Do.
Coney Canal	Smiths Fork Creek
Etna Canal	Salt River.

RESERVOIRS

Wyoming Development Co. Reservoir No. 2	Laramie River.
Wyoming Development Co. Reservoir No. 1	Laramie River and Sybille Creek.
Lake Hattie	Laramie River.
Hawk Springs Reservoir	Horse Creek.
Goshen Hole Reservoir	Do.
Goshen Reservoir	Do.
LaPrele Reservoir	LaPrele Creek.
Big Goose Park Reservoir	East Fork Big Goose Creek.
Big Horn Reservoir	Cross Creek.
Cloud Peak Reservoir	South Fork South Piney Creek.
Willow Park Reservoir	South Fork Piney Creek.
Twin Lakes No. 1 Reservoir	West Fork Big Goose Creek.
Dome Lake Reservoir	Do.
Upper Sunshine Reservoir	Greybull River.
Pierce Reservoir	Rock Creek.
Shell Reservoir	Shell Creek.
Kearney Lake Reservoir	North Fork South Piney Creek.
Lake DeSmet Reservoir	Piney Creek.
New Fork Lake Reservoir	West Fork New Fork River.
Fremont Reservoir	Pine Creek.
Boulder Reservoir	Boulder Creek.
Sulphur Crek Reservoir	Sulphur Creek.
City of Cheyenne Reservoirs	Crow Creek.

Wyoming has in recent years, under loans from the natural resource board, constructed a number of small reservoirs and canals to further our development and conserve water. Our State legislature has also authorized that board to contract for additional storage up to the amount of 60,000 acre-feet of water for municipal and industrial use in the Fontennelle Reservoir, a part of the Seedskadee project. This is under the authorization in Public Law 85–500.

To summarize our problems in connection with conservation of our water resources, they are as follows:

1. To supplement the water supplies for a considerable amount of our presently irrigated acreage by providing adequate storage.
2. To provide adequate water supply for future municipal and industrial uses in many parts of our State.
3. To fully develop our underground water potential.
4. To safeguard our future development by compacts with our neighboring States who share in the waters of our streams.
5. Adequate Federal legislation to safeguard and protect water rights secured under State laws in the West.

As we understand, the purpose of this committee is not to go into the question of Federal-State relations in the matter of water rights and water administration. It is, however, a question which we feel cannot be overlooked in a study of this kind. Each State has its own peculiar problems and in many fields is best qualified to work out those problems. We feel that adequate legislation by the Congress is necessary to safeguard the great development of our water resources that has been made under State laws and the water rights which have been acquired thereunder from encroachment by Federal departments and to offset certain Federal court decisions.

The potential for extensive industrial development in Wyoming because of our immense coal deposits and other minerals is very great, and large quantities of water will be necessary for this purpose.

The potential of future development of irrigation is limited only by the available water supply, as we have tremendous acreages of irrigable land, and development depends on costs as they may become feasible under future conditions. An estimate of potential development by 1980 would be an increase of 300,000 acres, and by the year 2010 we think that 1 million acres over our present acreage will be irrigated.

Wyoming, through royalties on mineral lands, has been the greatest contributor to the Federal reclamation fund, and our people must continue to urge that we receive benefits in water development to make up for those natural resources which have been used up in providing that contribution.

As a means of meeting future demands, I present the following observations:

A. A very considerable part of new supplies can be added by conventional methods as land values increase to make feasible the costs of such developments.

B. The control of water-consuming vegetation will help to conserve our water supply. In Wyoming, however, the willow and other growth along streams is valuable as shelter for livestock.

C. Our experience in weather modification has not been very satisfactory to date. Wyoming, for several years, has had a weather modification board, consisting of the president of the State university, the commissioner of agriculture, and the State engineer.

D. There are real possibilities in the reduction of reservoir evaporation by some type of cover and the reduction of seepage losses by different types of canal lining.

E. Desalination of much of our water in arid areas would make a considerable amount of it usable for stock and domestic purposes and, in some cases, irrigation.

F. Water use for pollution abatement has not been a serious problem in Wyoming as it has been in many Eastern States.

G. New technical developments will assist in meeting future demands. These might provide cheaper power for pumping, prevention of evaporation losses, better recovery of underground waters, use of saline waters, and in many other ways.

The CHAIRMAN. Mr. Lloyd, you give us your statement as you see fit.

Mr. LLOYD. I will proceed with my statement.

My name is Earl Lloyd and I appear here today as the State engineer of Wyoming, an office created by adoption of the constitution of the State of Wyoming in 1890. The constitution provides that he shall have general supervision of the waters of the State and the officers connected with its distribution.

The State engineer is an ex officio member of the Wyoming Natural Resource Board and has been delegated the duties of interstate streams commissioner. Also, he is an ex officio member of the State weather modification board, the Wyoming Stream Pollution Advisory Council, and the State soil and water conservation committee.

Before appointment to my present position, I served many years as deputy State engineer and assistant State engineer and by this association have been intimately connected with the problems of appropriation, diversion and distribution of the waters of this State and the development of those water resources.

Irrigation of agricultural lands has been of great importance in Wyoming and was first practiced here by the early settlers in the 1860's. Its development has proceeded by individual farmers and ranchers, partnership arrangements, ditch and canal companies, and irrigation districts, and since about 1904, the larger projects have been developed by the Bureau of Reclamation, which was at that time in the early days the Reclamation Service.

The value of water in the development of a State such as ours was recognized at the time Wyoming became a State and certain provisions concerning it were written into our constitution and implemented by the Water Code enacted by the first State legislature. The citizens of Wyoming, I am sure, are convinced that our water laws, as enlarged upon and amended through the years, constitute an excellent code of laws and administration for the water of this State. Rights to the appropriation and use of water have been adjudicated to those who have made beneficial use of it, under proper authorization, by the State board of control and there have been few appeals to the courts.

Rights are administered in accordance with the date of priority of the appropriation.

Wyoming is situated astride the Continental Divide and on the headwaters of four of the major river basins of the Western United States. Its waters flow to the Pacific Ocean, the Great Salt Lake, the Gulf of California, and into the Gulf of Mexico.

Another 75.6 percent or 73,680 square miles of the area of Wyoming lies in the drainage basin of the Missouri River, and is drained by the Yellowstone River, Clark's Fork River, Big Horn River, Tongue River, Powder River, Little Missouri River, Belle Fourche River, Cheyenne River, Niobrara River, and North Platte River. A small area around Cheyenne and southeast of Laramie contributes to the flow of the South Platte River.

Southwestern Wyoming contains the Green River and the Little Snake River, which are on the headwaters of the Colorado River drainage basin covering about 17.5 percent or more than 17,000 square miles of the State's area.

About 1,490 square miles or 1.5 percent of the area of Wyoming is included in the Bear River Basin, the waters of which eventually flow into the Great Salt Lake.

Snake River in Jackson Hole and Salt River in Star Valley area join to flow westerly across Idaho into the Columbia River and this basin covers about 5.4 percent or 5,256 square miles of Wyoming. The streams of this area flowing from the high mountains south of Yellowstone National Park contribute about 5 million acre-feet annually to the Snake River. Some 2 million acre-feet leave Wyoming in the Yellowstone River, and the Big Horn River has an average annual discharge of about 2,400,000 acre-feet. The annual yearly runoff of Green River, where it leaves Wyoming (as defined by the period 1921–45), which is designated as normal by the U.S. Geological Survey, is about 1,426,000 acre-feet to which would be added the flow of Little Snake River and some minor streams to total our contribution to the Colorado River. The North Platte River, including the amounts crossing the State line in canals of the North Platte project, flows about 1,600,000 acre-feet.

Wyoming streams produce a mean annual runoff of about 15 million acre-feet and at the present time it is estimated that we are depleting this supply about 2,500,000 acre-feet by the use and reuse of this water for beneficial purposes. With more complete development, this consumptive use will probably be increased to around 4 million acre-feet.

Adjoining States have established some rights, some equities to part of this water and on several streams we are limited either by court decrees or by compacts in the amount we can utilize. Wyoming has, by several interstate water compacts, protected itself in its future development by agreements on the use of its waters.

The greatest water use in Wyoming today is for irrigation purposes and we are actually irrigating about 1,700,000 acres of land. Acreage having adjudicated water rights totals about 2,750,000 acres. In this State, hydroelectric power is principally produced by release of water stored for irrigation purposes.

Although the major irrigation and hydroelectric power projects in our State have been constructed by the Bureau of Reclamation, the acreage irrigated constitutes about 300,000 acres of the total lands

irrigated. Individuals and private enterprise have developed over 1,100,000 acres, and companies that operated under the Carey Act some 200,000 acres. About 30,000 acres have been developed by the Bureau of Indian Affairs.

In addition to the surface water resources in Wyoming, it has been found from investigation and development that there is a very considerable ground water resource. The full potential of this is to a large extent yet undetermined. Greatest development in ground water up to this time has occurred in the eastern part of Laramie County where some 15,000 acres are irrigated from wells, and in the Cheyenne area where the city secures a large part of its municipal supply from wells west and northwest of the city. Considerable development has proceeded in the Wheatland, Torrington, and Lingle areas where it is used principally to supplement surface water irrigation supplies and for municipal purposes. Rather extensive use of underground waters has been made in other sections of this State, particularly around Casper, and in the Big Horn River, Niobrara River, and Bear River Basins. Recently a number of industrial plants have utilized such ground water supplies for the development of their industrial plants. The State of Wyoming in 1957 enacted a quite comprehensive underground water law.

Since information on existing and potential projects of the Bureau of Reclamation will, as I understand, be furnished you by that Bureau, I will not attempt to outline those projects, which constitute a very considerable part of our irrigation and power developments.

The water resources of the North Platte River are probably the most highly developed of any similar stream in the West.

The State of Wyoming has, through loans to irrigation and drainage districts and, in recent years, loans from the Natural Resource Board, provided financial assistance in the construction of reservoirs, development of projects, and the rehabilitation of seeped lands.

It was my privilege to hear your staff director, Mr. Schad, explain the work of the Senate select committee before the Association of Western State Engineers in Santa Fe, N. Mex., on August 20, and, as I understand, the purpose of this committee is not to go into the question of the Federal-State relations in the matter of water rights and water administration. However, this is a problem which we feel must be given some consideration in a study and report of this kind.

Each State has its own peculiar problems and in many fields is best qualified to work out those problems, particularly in the field of rights to the appropriation and use of water. It appears to us that future water conservation development will be greatly affected and either assisted or delayed by action of the Congress in the matter of reaffirming the validity of the State's rights to control and administer their waters. A national water policy, we feel, must take cognizance of this problem.

The recent trend in decisions of some Federal courts has raised many questions in this regard and we feel that corrective legislation is necessary to reestablish the historic congressional policy that the States have primary jurisdiction in the use and administration of their water resources. It would seem that, consciously or unconsciously, many people in and out of Government are implementing the theory of Federal supremacy in water.

In this connection, I wish to state that, in Wyoming, our relations with the Federal departments engaged in water resource development, and the securing of water rights for projects they have constructed, have always been excellent. Permits to appropriate water under State law have been secured by the Bureau of Reclamation, the U.S. Forest Service, the National Park Service, the Corps of Engineers, the Soil Conservation Service, and other agencies engaged in such activities.

We feel that adequate legislation by the Congress is necessary to safeguard the great development of our water resources made under State laws and the water rights which have been acquired thereunder from possible encroachment by some Federal agencies and particularly to offset certain Federal court decisions.

The members of this Senate committee are familiar with the various bills that have been introduced in the Congress to achieve this objective by the members of the Wyoming congressional delegation and by Senators and Representatives from many other Western States. I will not attempt to analyze these numerous bills now pending before other committees of the Senate and the House.

Within the boundaries of Wyoming are immense deposits of coal and other minerals which furnish the potential for extensive industrial development which is bound to come and will require large quantities of water.

The potential of future irrigation development is limited only by the available water supply as we have tremendous acreages of irrigable land. Development of this potential depends on costs of construction as the projects become feasible under future conditions. An estimate of potential irrigation development by 1980 would be an increase of present acreage by about 300,000 acres and beyond that date to 2010 we feel that an additional 700,000 acres can be irrigated.

To meet future demands for water and conserve our supplies, I suggest study of the following items:

1. A very considerable part of future development can be supplied from existing sources by conventional methods as land values increase and an expanding population makes feasible the costs of such developments.

2. Better control of water consuming vegetation or phreatophytes along our streams and canals would save water lost by transpiration or used up by growths of that kind. Many streams are lined with willows and meadows contain clumps of these growths, which consume considerable quantities of water. In some places in Wyoming, however, such growths are of considerable value in providing shelter for livestock.

3. Wyoming, for several years, has had a State weather modification board which consists of the president of the State university, the commissioner of agriculture, and the State engineer. Experiments were carried on for several years in some sections of the State by companies operating under contracts with associations of farmers and ranchers. So far we have been unable to determine that satisfactory results have been obtained by seeding the clouds from ground generators. In some areas of the country, and I think particularly probably on the western coast, where proper cloud formations exist for a considerable time, it would perhaps have more value than in our usually clear skies.

4. Recent experiments in preventing evaporation losses by some type of film cover over the water surface indicate that reservoir evaporation might be materially reduced with further work along that line and badly needed water saved in arid areas. Reduction of canal seepage losses by different types of canal linings will reduce the amount of water to be diverted and will aid future irrigation. Much more of this type of work has been carried on in this State in recent years.

5. The desalination of saline waters would make available for use large quantities of water if economical methods can be found to do this at a feasible cost.

6. Pollution abatement in our streams is not as serious a problem in Wyoming as it is in many other parts of the country. However, our pollution advisiory council has done a very good job in securing preventive measures where such pollution existed or now exists.

7. In my opinion, there is little doubt that new technical developments will be of great assistance in meeting future demands upon our water resources. Some of these may provide cheaper power for pumping, better recovery of underground waters, reduction of evaporation and seepage losses, use of saline waters, and better management and less waste of our water supplies.

I thank you for this opportunity to appear and present our views.

Senator McGee. On behalf of the committee, Mr. Lloyd, I want to thank you for that excellent presentation.

Does any member of the committee have questions? Mr. Chairman?

The Chairman. I have no question.

Senator Kuchel. Mr. Chairman, if I may, I do want to observe that while it is not set forth in so many words in the resolution creating this committee, the problem, nevertheless, of Federal-State relationship with respect to rights to the use of water certainly is, in my judgment, a relevant consideration to the type of recommendation that this committee will make to the Senate. It is certainly important. It has been of high importance in the State from which I come. I am sure that Mr. Lloyd is acquainted with the problems that we have had intermittently between the State government and the Federal Government, and I simply want to say that I view with extreme sympathy his comments along those lines.

Senator Young. Mr. Chairman, I make the comment, too, that I think it is inescapable that something will have to be done about water rights. For example, about two-thirds of the water of the Missouri River originates in Wyoming and Montana and part of it in North Dakota. We store most of it in North Dakota and South Dakota. Already some powerful opposition is developing in the States to the south of us against any further irrigation projects in our States.

We believe that we have a right to the use of at least a part of that water. So I think sooner or later the Congress is going to have to get into this business of water rights. Does the State where the water originates have the right to that water for irrigation purposes? I believe they do.

Senator McGee. Thank you, Mr. Lloyd.

Senator O'Mahoney, as you know, is unable to be here.

We can report that you have never seen him looking so well in many years as he is looking today, but he has to stay close to the hospital for daily therapy and could not stray out here for these nearly 2,000 miles. However, his administrative assistant and Rock Springs' shining star, Mike Manatos, is here to submit the statement in behalf of Senator O'Mahoney.

Mike?

STATEMENT OF MIKE MANATOS, ADMINISTRATIVE ASSISTANT TO SENATOR JOSEPH C. O'MAHONEY

Mr. MANATOS. Mr. Chairman, Senator Young, Senator Kuchel, Senator McGee, it is a real pleasure to appear here this morning and read the following statement from Senator O'Mahoney:

The hearings of the Senate Select Committee on National Water Resources, one of the first of which is to take place in Laramie, constitute a forum in which people of the United States have the opportunity to explore the economic and water development challenge which has been dramatically emphasized by the recent personal visit of Nikita Khrushchev, Chairman of the Council of Ministers of the Union of Soviet Socialist Republics. The public should note particularly the effect this challenge will have on the ultimate decision which we now know must be made to determine whether our system of government, established upon this continent in 1789 as a result of the free choice of the citizens of the Thirteen Colonies, is destined to survive the expansion of communism established in Russia in our time by a small group calling itself the vanguard of the proletariat.

Let no one imagine that the issue now is merely the old-fashioned issue of reclamation or flood control. Mankind in the modern world needs more water than ever before. It is not merely a question of growing crops or turning arid land into croplands, it is a question of supplying water for automobiles, for air cooling, for bathrooms, and swimming pools well beyond the number ever used before. The water level in urban cities and in rural areas has been lowered and it is a national necessity to find ways and means of conserving water.

Let no one mistake the fact that the challenge is here for us to meet—Khrushchev has told us so. At the very moment that Mr. Khrushchev was bluntly telling us and the whole world that our system was certain to be supplanted by communism, the President of the United States was asking Congress to accede to a policy of no new starts in any program on the part of the Bureau of Reclamation or the Army Corps of Engineers to conserve and develop the wasting waters of our great rivers. At this very moment Russia was initiating a new broad program to conserve and utilize the waters of the great river systems of both European and Asiatic Russia. This is a program launched to give communism a water expansion program that exceeds anything that we have undertaken.

Two Senators, Frank Moss of Utah and Ernest Gruening of Alaska, are now in Russia studying at firsthand this gigantic undertaking. From testimony presented at a joint hearing of the Senate Committee on Interior and Insular Affairs and the Public Works Committee on the "Water Resource Program of the United States, Russia, and Red China," over which I presided early in 1958, I feel certain these

Senators will report additional facts to indicate that this gigantic Russian effort will inevitably give to the U.S.S.R. an advantage in the peaceful competition in coexistence which Mr. Khrushchev advocates while he offers no guarantee of electoral rights to people of the Iron Curtain satellites or indeed to the people of the Soviet Union who, while permitted to cast ballots, are permitted to vote only for candidates of the Communist Party.

Our program of no new starts is not only initiated while Soviet Russia embarks upon a program of vast new starts, but also at a time when we are following a policy of tight money for private and public enterprise in the United States and a policy of loose money for the Development Loan Fund in the mutual security program to which we are called by this administration to adopt for underdeveloped countries throughout the world. While we are making it difficult to borrow money for private and public projects at home we are making it easier to borrow for private and public projects abroad. At the same time, we are cooperating in the creation of a new money lending institution to provide easy credit for the nations the executive branch desires to help.

The question we must ask ourselves in the next Congress is this: Shall we help ourselves by a rational modification of the plan we have initiated for foreign aid? A similar question is this: Are we properly prepared for the economic war which we are undertaking if we accept on Soviet terms Mr. Khrushchev's call for coexistence? A policy of no new starts is not a realistic way to adopt a policy of competitive coexistence.

Mr. Khrushchev has proposed disarmament, complete or partial, with no concession to the principles of freedom for which we have told the world we shall continue to stand. Surely since his arrival here on September 15 there is hardly a citizen of the United States who does not realize that the leader of the Soviet world has challenged us as the leader of the free world to accept a competitive economic contest. Obviously it will do the free world little good to gain disarmament of any kind while at the same time we abandon our own program of natural resource development, including that of water utilization and conservation.

Well over a year ago, I predicted this challenge in a report to the Senate. It was Senate Report No. 1926, 85th Congress, 2d session, made by Senator Dennis Chavez, chairman of the Public Works Committee and myself. The last paragraphs of that report were captioned "Khrushchev's Challenge." The findings were based upon the testimony of Senator Allen Ellender, of Louisiana, the then Maj. Gen. Emerson Itschner, Chief of Army Engineers, whom the President has only recently promoted to be a lieutenant general, and upon a public address by Mr. Allen Dulles, Director of the Central Intelligence Agency.

I remember well the testimony of Senator Ellender who is chairman of the Public Works Subcommittee of the Senate Appropriations Committee, and who personally undertook on his own initiative a tour through Russia in Europe and Russia in Asia to inspect at firsthand the vast projects the Soviets have undertaken. He was given every opportunity to see what was being done, and he came back with the conviction that the United States cannot safely neglect its own un-

finished program in the face of this new competition from the Soviet leaders. The Communists are engaged in an avowed and open plan to wrest world leadership from us.

On July 23, 1958, in preparing the report which Senator Chavez and I made to the Senate, I was prompted by this testimony to write the following:

The facts developed by Senator Ellender, General Itscher, and Director Dulles and other witnesses reveal rapidly changing conditions in the world economy to the potential disadvantage of the United States and are, in fact, a summons to this country to devote renewed attention to the expansion of the domestic economy.

A significant measure of that expansion will include development of water resources. The hearings have indicated the need for further study to insure that water development programs undertaken to meet the demands for expansion of the domestic economy will be feasible and economically sound.

Early this year under the sponsorship of Senator Mansfield the Senate responded to this need by the creation of a Select Committee on National Water Resources to be composed from the Committees on Interior and Insular Affairs, Public Works, Agriculture and Forestry, and Interstate and Foreign Commerce, all of which have jurisdiction over varying facets of legislation with respect to water resource development. The able Senator from Oklahoma, Mr. Kerr, has been elected chairman. At my recommendation, Wyoming's unique and important position as a State wherein three great river systems have their origins was recognized by the appointment of the junior Senator Gale McGee to serve upon this committee.

The select committee cannot, of course, make its recommendations until it has the facts about the water resource development and the need for such development. That is why the committee is in Wyoming today, to get the facts from you in Wyoming who best know the potential and the steps necessary to bring into the economy the added strength of water development needed to meet the challenge which we are accepting.

Of course the Senate Interior Committee through the Subcommittee on Public Lands, of which I am chairman, and the Subcommittee on Irrigation and Reclamation, of which I am a member, is actively engaged in the accumulation of facts and figures with respect to the development of the public lands and of those areas which are susceptible of effective irrigation. I am aware, of course, that it is essential in all development projects to be certain that they are carefully planned in advance to avoid danger of waste and extravagance. The object is not to build projects of themselves, but to build projects that will sufficiently develop the resources of our West. I am sure that the new committee is well aware of the necessity of economy also, and will be guided by a realization of the need for efficient competition in substituting effective water development for wasteful arms races.

It is a matter of great regret to me that I cannot be present personally to listen to your testimony. This fact is based upon the necessity of my completing the rigorous course of physical therapy which has brought me so well along the road to physical rehabilitation. I am asking, however, for a full report on this hearing from my staff and from the staff of the committee. In addition, I have asked Mr. Mike Manatos, my administrative assistant and Mr. Platt Wilson of Kemmerer, a well-known Wyoming engineer to follow the subject. I shall

also study with interest and pleasure the transcript of the testimony which will be taken here today.

By giving this testimony you are taking an active and effective part in the democratic system of government which has been challenged by Mr. Khrushchev. The success which your elected leaders may achieve will depend in large measure upon the facts which you bring to their attention. From long experience, I know that the facts will be forthcoming from the people of Wyoming. I have every confidence that the committee will then be able to recommend a water resource development program which will allow us to accept the challenge offered us by the Soviet dictator in the knowledge that a free people can be strong without sacrificing their liberty, and the United States, which through the wise use of its freedom became the greatest industrial nation of the world, can continue to maintain its leadership now by wise economic progress. There is no reason why we should give place in competitive coexistence to Communist peoples led by dictators.

Not by sputnik or lunik or by the new Soviet satellite launched at the beginning of the month to orbit the moon have the Communists developed that a dictatorial class and competition do more for the people than they themselves can do. Our greatest achievements of the past which have led to modern complacency are proof enough that we have the system which will do more for the advancement of the people than that which is presented to us by communism. What we need most to do is to lay complacency completely aside and devote ourselves strenuously to government of the people, by the people and for the people.

Thank you.

Senator McGEE. Thank you, Mike, very much.

I would like, Mr. Chairman, to insert in the record at this point a statement that was sent up to us by Congressman Byron Johnson of the Second District of Colorado, because we have common problems in water source, along our frontier. He wished to make an expression of the utilization of those resources.

The CHAIRMAN. Very good.

Senator McGEE. Put that in the record at this time.

(The prepared statement referred to follows:)

STATEMENT OF HON. BYRON L. JOHNSON, U.S. REPRESENTATIVE FROM THE STATE OF COLORADO

Mr. Chairman and members of the committee, I want to commend you for undertaking these hearings and the study of water resources development. As an economist, I am particularly distressed by the habit people have fallen into in this country of assuming that every dollar expended by a governmental agency is more wasteful than the same dollar of private expenditure. Every economist recognizes the primacy of investment over consumption, regardless of its source, because investment in capital provides the wherewithall to expand the production of an economy.

Moreover, every economist recognizes that certain forms of capital are basic to the efficient utilization of other forms. Putting it simply, a facory which is private capital investment is made efficient by reason of the fact that it is adjacent to a highway, a railroad, a water supply system, a sewage disposal plant and has available the other public utility services of electricity, gas, and telephone.

It is clearly evident that certain of our basic utility services can be provided and are being provided through private capital investment. It is just as clear that certain other basic capital requires public investment. Currently prominent among these is the national highway system.

Water resources development represents one of the highest priority forms of capital industry deserving of our attention from both public and private sources for reasons which are peculiar to the resource itself.

In the first place, the supply of water is a fixed given quantity. We can multiply the number of miles of road, the number of kilowatts of electric generating capacity, the size of gas pipelines or number of telephone cables. We cannot increase the rainfall appreciably by techniques now known. Apart from the demineralization of sea water near the coast, the rest of the country has available only such water as falls on the land and thereby replenishes the rivers and lakes and replenishes our underground water supplies. Water resources development, therefore, must increasingly take the high-cost route of storage and conservation of marginal supplies.

The people through public and private action have already appropriated the readily available low-cost water resources. At this point each additional acre-foot of water made available on a continuing basis is likely to be more costly than the previous acre-foot.

Second, the relatively fixed annual amount of water resources is subject to a demand which increases both with population and technology. Even if the per capita consumption remained unchanged, the growing population would place increasing demands upon this scarce and precious resource. The demands are increasing more rapidly, however, because modern households use water more freely. For example, the mere installation of a garbage disposal unit greatly increases water consumption. Practices of business and industry which accompany new technology tend to require increasing use of water. There is an occasional technological development which may permit a reduction in the volume of water used per unit of output, but typically the case is the other way.

It may be that the increase in cost of water will accelerate the development of water conserving techniques in electric power production, in refinery operations and in other water-use relationships. We must plan on the assumption, however, that our already scarce resources will be subject to an increasing demand. This underlines the importance of serious concern from this day forth for water resources development.

Third, water resources development is primarily a matter of public investment for the following reasons:

(*a*) Water is a multiple-use resource. That is to say, the proper planning of water conservation and its development provide water not only for domestic, commercial, industrial, and agricultural use, but also at various locations for recreation, flood prevention and control, power, navigation, and transportation urban sanitation and other waste disposal, and fire protection.

(*b*) Of these uses, power is the only one which has consistently been an inducement for investing large sums of private capital. There have been a few private irrigation works, most of which are the easy, low-unit cost ones. We must expect that a significant portion of future water resources investment will be from public funds and particularly from Federal funds.

A study made by Walter L. Picton, Director of the Water and Sewerage Industry and Utility Division of the U.S. Department of Commerce, published last June, projected the growth in water resources investment by categories between 1954 and 1975. It is interesting that he projected the total 20-year requirements to cover deficiencies, growth, and obsolescence construction at $214 billion. Of this total, it was estimated that $53.4 billion should be Federal funds. Thus one-fourth of our total must come directly from Federal funds. States, and especially local governments, will provide another major component of the investment.

It has been hard for me, as a Member of Congress, to understand how the administration can tell us as a matter of official fact that we ought to be investing $53 billion of Federal funds over the next 20 years for water resources development and then at the same time turn around and complain bitterly because we passed a public works bill designed to move forward down that road. The President's veto of the public works bill and his no-new-starts policy, indicate that his administration does not take the long view of our responsibilities to develop this country for our children and their children.

(*c*) The multiple-use concept of water resources underlines the urgency of adequate public development. The reasons are very simple. A private developer will measure benefits almost solely in terms of those actions which will yield maximum net revenue to the invester. The Government can look at the whole benefit situation and the whole cost picture. More specifically, the Government

can evaluate the true worth of all forms of water use, including recreation, navigation, and other transportation, and of waste disposal. Only the Government can calculate a benefit-cost ratio in terms of the whole public interest involved. It can operate its water resources development projects so as to secure the maximum aggregate of benefits, even if this means a slight loss in cash revenues.

To illustrate this point, let's be specific. A power dam operates most efficiently if it is kept filled virtually to the crest of the dam at all times because this provides the highest hydrostatic head and each foot of water adds to power output. But if the power dam is at the same time a flood-control installation, it must be operated so as to provide reserve capacity against sudden rains, rapid snowmelt runoffs and other flood contingencies. Private operation will tend to involve design features and operations in terms of the directly reimbursable service of power sales, while public operation can give due regard to all the public interests in water resources development.

Fourth, the experience of years past amply demonstrates the validity of the proposition that the sooner proper development is undertaken, the less costly it will be. Quite apart from questions of inflation and changing price indexes, the fact is that heavy construction on water resources development involves tearing up paved streets and highways to lay waterlines, purchase of rights-of-way, clearance of sites, etc. Inasmuch as we know that our growing population demands that such investment be made, the more rapidly we get on with it, the cheaper it will be for the public over the whole period. The extra dollars spent now will save many more dollars that would need to be spent later. The only increase offsetting the savings is in the amount of interest to be paid over the period of time of the advance outlays here recommended. I am firmly convinced that the long-run savings will far outweigh the slight present increase in the cost of making the outlay early.

Fifth, the entire argument as to the propriety of public investment in water resources seems to miss the fundamental point that water resources are essentially a part of our public patrimony. As the scriptures teach us, "The Lord sends his rain on the just and on the unjust." All of us are beneficiaries of the elements of nature which provide our water supply. It is unthinkable that we should ever retreat from the idea that the water in our rivers and lakes is not truly a part of the perpetual domain.

Water is so essential an element of life that public ownership of the asset is a concept almost universal in human history, both here and throughout the world. What the people own, they certainly have the right to develop and conserve wisely.

The fact that a few limited uses of water are so profitable that private owners will rush forward to undertake those particular developments should not delude us. Unless there are guarantees that the private development can and will protect adequately, efficiently, and continually all the other public interests involved in multiple use of water resources, there should be a general preference for public development so as to assure that the public interest in the continued maximum beneficial use of what the public already owns is guaranteed. Any position less than that would be a betrayal of the trust of the offices we hold.

Senator McGee. Now, may I say to the remaining witnesses, because there are more than 40 of you that still must testify, we would like very much after our base-laying testimony here, which we have just had from Mr. Lloyd and Senator O'Mahoney, we would like you to try to present the real core of your statement in a matter of 3 or 4 minutes in order that we may stay on schedule and get all of the witnesses before us, in all fairness to those who are clear down at the end of the list, before it becomes necessary to adjourn at approximately 3:30 this afternoon.

The next witness is Hon. Worth Story, the mayor of Cheyenne.

STATEMENT OF HON. WORTH STORY, MAYOR OF CHEYENNE

Mr. Story. Mr. Chairman, Senator Kerr, Senator McGee, Senator Kuchel, Senator Young:

My name is Worth Story and I am here representing the Wyoming Association of Municipalities.

I want to thank you for giving me this opportunity and will try and present some of the problems of our municipalities.

Wyoming is a small State in population but it is large in square miles. We do have areas that can provide for future expansion of our population, dispersement of defense and industry and we want to be able to help do that.

Maybe you don't know it but in Wyoming our population is the same as the rest of the Nation. It is in our cities and towns and will continue to grow.

Our municipalities must develop water for this future growth and as you know, water development is expensive and long range. We feel that because of this, water rights must be firm on both Federal, State, and privately owned areas.

We also feel that in developing water for municipal use we must not overlook the multiple use and damage other economies or other uses of water such as recreation and agriculture.

The State and Federal projects of reclamation should be continued to help in Wyoming. Our cities and towns do need help in planning and financing these water developments and also to help provide loans that can be of very long term at not too high an interest rate.

That is about all I have to say on that. I did present you with a written statement.

Senator McGee. Yes, and your statement, Mayor Story, will be put in the record in its entirety.

Mr. Story. Thank you.

(The prepared statement referred to follows:)

STATEMENT OF WORTH STORY, MAYOR OF CHEYENNE, REPRESENTING THE WYOMING ASSOCIATION OF MUNICIPALITIES

My name is Worth Story and my address is City and County Building, Cheyenne, Wyo. I appear here today representing the Wyoming Association of Muncipalities of which I am president.

The municipalities of Wyoming are facing the same water problems which are general throughout the United States. In Wyoming approximately two-thirds of the population reside in the cities and towns. Mechanization of farming and ranching, increased population growth, and industrialization have increased the size of the cities in much greater proportion than the overall growth of the State. This, in turn, has meant that municipalities must constantly increase their water supplies and the facilities for carrying this water.

The responsibility given your Select Committee on Natural Water Resources to "make extensive studies of the extent to which water resources activities in the United States are related to the national interest and of the extent and character of water resource activities * * * that can be required to provide the quantity and quality of water needed for use by the country's population * * *" is indeed a great one. For obvious reasons, the cities of Wyoming have a very compelling interest in your studies and deliberations. As I am sure you gentlemen are well aware, the population explosion which is occurring nationally knows no boundaries and the sparsely populated sections of the Nation will undoubtedly require wise development of water resources to take care of the increasing population. Likewise, the struggle for existence as a Nation as a whole demands that our defense system be increasingly decentralized.

In the Western States, as elsewhere, wise use of water resources can be developed most effectively on a regional basis with adequate consideration given to domestic, agricultural, and recreational uses. If the cities of Wyoming are to grow, there is great need to depend upon firm water supplies and methods of controlling water pollution.

The President's Water Resources Policy Commission has emphasized intercommunity cooperation to make possible areawide coordination of water supply sources; but it has further emphasized that such planning should be considered

in connection with the planning of all comprehensive basin programs. This becomes a problem of much greater significance than one pertaining to an individual city or town.

For such overall development of water resources in Wyoming and other States, the Wyoming Association of Municipalities would like to encourage your committee to strongly urge the implementation of the following major policies:

1. The development of water resources is a State and National problem and should be considered as such as far as planning is concerned.

2. In all sections of the country, both State and regional, wise planning should be pursued regardless of immediate needs, since the population explosion and our ever-expanding economy will engulf all parts of the Nation.

3. Firm water rights must be provided on government as well as private areas so that future development can be assured. It would be impossible to plan the future development of water for a municipality if the water rights were not assured. Water development for a municipality is necessarily a long-range and continuing program.

4. Pollution should be controlled on all rivers and streams and ever-greater recognition given to the fact that such pollution from all sources is as much a national problem as the actual development of our available water sources. Pollution control would make more water available for multiple use.

5. The Federal Government could help in the financial planning of water projects for municipalities in providing or helping to provide loans to the municipalities that could be of a fairly long term and at as low an interest rate as possible.

6. In development of water for municipal purposes the multiple use of water should always be considered. As far as possible these developments should not hinder other uses such as recreation, or damage other economies such as ranching and farming.

7. The State and Federal Governments should assist in watershed management to help increase the water production by these areas with advice on such things as snowpack management and vegetation control.

I have not attempted to make a detailed statistical analysis of water supply and uses within the State, since I am sure this had been and is being provided to your committee by Federal and State agencies.

The municipal water problems must be given ever-increasing emphasis in a Nation in which urbanization is taking place at a tremendously rapid pace. Odd as it may first appear to the visitor, Wyoming is not an exception.

Senator McGee. Are there any questions of Mayor Story?

Senator Kuchel. Where does your city get its water today, Mayor Story?

Mr. Story. The Cheyenne, and we get part of it from underground wells and part of it from the surface out of the draining area that is in the mountain.

Senator Kuchel. Do any of your cities utilize the water of interstate streams passing through Wyoming?

Mr. Story. I am sure that Casper does in that they use water out of the Platte. All of our cities have the problem, the same problem. They probably have it in the east. Some of us have plenty of water with no distribution. Some of us have plenty of distribution with no water.

Senator McGee. Thank you. This is a facet of the problem of water in Wyoming, as you mentioned, Mayor Story, that is relatively new. That is, we thought of your water problem historically as much less to do with cities and concentrated people than with the growing of our grass and the providing of our moisture for farmlands. This is the reason why it is well that we have this part of the picture in order to round ou that facet of our needs.

Mr. Story. Senator, I think Wyoming's future is in its cities and towns for growth, populationwise, and in industry.

Senator McGee. Yes.

The CHAIRMAN. I want to say just one word to the Mayor. I think he mentioned one of the most important facts I know and that is with reference to the explosive increase of the population of our country and that the trend is toward the cities and towns and it is going to be in the area where the cities and towns have the water for their present requirements and their opportunity for future growth that these great increases in population will occur. I think that is one of the important elements we must take into account.

Senator MCGEE. As you mentioned again in your eloquent address the other night, Senator Kerr, in the realm of population statistics there are plenty of new starts these days.

The CHAIRMAN. Right.

Mr. STORY. Thank you.

Senator MCGEE. That is all, then, Mayor Story.

Senator MCGEE. Now, Mr. Bill Dineen from Cheyenne.

STATEMENT OF W. J. DINEEN, PRESIDENT OF THE BOARD OF PUBLIC UTILITIES OF THE CITY OF CHEYENNE

Mr. DINEEN. Mr. Chairman, Senator Kerr, Senator Young, Senator Kuchel and Senator McGee, it is a pleasure to appear before you and give this information to your committee today.

My name is W. J. Dineen. I am president of the Board of Public Utilities of the city of Cheyenne. This is a board which was established after our legislature passed an enabling act creating the commission of cities to establish such boards where they wished to do so.

We operate in this board under the city council of Cheyenne and in full cooperation with that council but in a measure we are autonomous and have had full control of the water and sewerage in the city for approximately the past 18 years.

Our board is in control of the development and study of supplies and usage, wastage control of water and all its uses. Water is all metered in the city of Cheyenne. Such as air conditioning, this use is also controlled by requirement of the reuse and filtration and the same thing is true of swimming pools and other usage such as that. I mention that to show that there is no waste and we have no losses of any consequence in the city.

Our city, as are others in the State, is growing rapidly and more so than anticipated in studies a few years ago. Our population is growing, our area is growing, individual use of water has and is increasing rapidly.

Industry is growing and studies show that it will continue at a faster rate than had been anticipated. Study indicates our present surface and underground water use would have been adequate to supply the needs until about 1975. Our present needs in the next 5 years will bring us up to the full use of what we thought was available and adequate up to 1975. Our growth and our increased anticipated use now shows that we will use up that supply much faster than had been anticipated.

A supply of approximately 25,000 to 30,000 acre-feet of water should be on hand in order to permit us to grow, for a firmness test of use must be available to us if we are to grow and to permit industry

and people to come in and live in Cheyenne where they want to live and develop.

The present development is at the maximum without destroying the economy of sound ranches and farms in our area. We want to preserve these economies if possible and wherever possible.

Our water and sewerage department is under firm control and on a sound basis. The studies show that our city will probably in a few years bring into the city limits an additional area larger than the existing area. Some of this is and will be new development and growth. And much is now developed, at least in part, in a large area that needs city filtered water, potable water supply, and city sewerage control in place of the wells and septic sewerage control now in use, all overused and becoming dangerous.

Our cost for new water and sewerage control will probably range from approximately $12 to $15 million in the years ahead, probably within the next 10 years.

These are additions to cost within the city limits not ordinarily included in development and new supply cost. Cheyenne operates on a sewage disposal system plan to control pollution of downstream water, so far as what the city controls within the city limits. Cheyenne faces a demand of financial load in addition to present load which may be burdensome to the extent of needing some help and low interest money over a long period to keep from attaching a cost of the water to users which would retard our growth and become prohibitive.

Thank you.

Are there any questions, gentlemen? I would be glad to answer them.

Senator McGee. Have you any questions?

Senator Kuchel. It seems to me your city at the moment is in pretty good shape. From what you say, I think that is an excellent statement. The problem for this committee is to lay down, I take it, a series of recommendations which might reflect a modern national policy which would permit your State and its political subdivisions to cooperate in the future to provide for additional supplies of water commensurate with your question of growth.

I often marvel, Gale, if I may—I have not commented too much like chamber of commerce people from my State do—I have often wondered what we are going to do to supply water for the people whom I represent. My home community before the war—I practiced law there—had about 12,000 people. Today it has 100,000. My State like your State has gone forward in providing plans for the future development, but I think it is to the credit of your city government that you have done that yourself.

Senator McGee. May I say if you would stop making California such an attractive place to live, I think we could contribute to a slowdown in your population increase out there.

Senator Kuchel. There are so many problems. Some engineers have indicated that in their belief our Capitol City, Washington, D.C., will reach the point where all the water now flowing down the Potomac River will be used and it will be dry. Well, that, of course, is difficult to imagine. But we are approaching with increasing rapidity the time where we need to develop additional sources of water for all purposes.

Senator McGEE. That is your real problem in Cheyenne. The ceiling is already there. It is going to limit your growth.

Mr. DINEEN. Senator, we have used up all the water that is available to be developed in the area which we now have. We have to reach out beyond our present possible supply for more water. We have no more of any quantity that can be developed.

Senator McGEE. I think you will find from the philosophy of these people here today that you see spelled out repeatedly is very much like the philosophy that we found in Bismarck all day yesterday. That is, they are taking us at our word when we say we are trying to look ahead in order to anticipate these tremendous demands that are going to be made on our water so that whatever else may happen to us we are not going to falter or fail because we did not have foresight. And your case makes the point very beautifully.

Mr. DINEEN. Thank you.

Senator McGEE. Thank you very much.

I want to insert in the record here a statement from Deming W. Morrison, consulting engineer in Cheyenne that adds a little additional information and bears out points of both Major Story and Mr. Dineen.

(The prepared statement referred to follows:)

STATEMENT BY DEMING W. MORRISON, CONSULTING ENGINEER, CHEYENNE, WYO.

Estimated population Cheyenne 1970, including suburbs 70,000. Required amount of water: 25 million to 30 million gallons per day. Available at present time, normal year, 15 million gallons per day. Available at drought period, less than 10 million gallons per day. Deficiency estimated at 15 million gallons per day for future growth. Safe average 20 cubic feet per second (probably in excess of requirements). Which amounts to 40 acre-feet per day storage, or about 14,000 acre-feet storage per year less evaporation.

Solution: Suggest diversion from Green River into Colorado River of desired amount. Then pick up from Big Thompson project in Colorado the requirements for Cheyenne at some diversion point above Fort Collins suitable for gravity flow through pipeline to either new reservoir on Crow Creek or utilization of existing reservoirs. Diversion to be made at off season requirements.

Estimated cost: Based upon shot-gun estimate without benefit of extensive surveys.

70 miles of pipeline including diversion structure	$25,000,000
Possible storage reservoir 20,000 Acre-Feet	2,000,000
Total	27,500,000

Estimated cost per property owner per year would be less than $4 per month on 20-year basis.

This plan requires considerable study with extensive surveys, but is proposed as a possible solution to the water requirements of Cheyenne. To my knowledge there are at least three other proposals in the records in the city of Cheyenne.

It is believed that at one time the Bureau of Reclamation realized the serious nature of the Cheyenne water supply and included a suggested plan for diversion to supply water. Please refer to old maps and designs of the project.

Senator McGEE. The next witness is Mr. Carl Johnson, State forester.

STATEMENT OF CARL JOHNSON, STATE FORESTER, STATE BOARD OF LAND COMMISSIONERS

Mr. JOHNSON. Senators Young, Kuchel, and McGee, I am Carl Johnson, Wyoming State forester, presently on the Wyoming State Land Board, composed of five elective officials.

I have a written statement which is my testimony.

Senator McGee. Your full testimony will be submitted in the record.

(The prepared statement referred to follows:)

TESTIMONY OF CARL JOHNSON

My name is Carl Johnson and my address is Capitol Building, Cheyenne, Wyo. I am a graduate of the University of Montana School of Forestry and I am employed as the State forester under the State board of land commissioners.

Mountain soils in Wyoming are relatively unstable with natural geologic erosion still prevalent in many places. However, accelerated erosion due to fires in Wyoming forest areas, old abandoned roads, and overuse of range by livestock and big game is also prevalent.

Many opportunities exist to improve Wyoming watersheds through a soil and water rehabilitation program. In many places such a program is urgently needed. Reforestation of burns, range reseeding, range fencing, range water developments, check dams in gullies, water bars on old roads are some of the needed work improvements. Contour trenching and changing vegetative cover from sagebrush and weeds to grass would stop surface runoff, floods, and erosion, simultaneously improving range conditions.

Many places where work of this kind is most needed are on national forests, other Federal lands, and State and private lands situated on watershed areas. The Forest Service has already made an extensive survey of watershed improvement and flood prevention needs in Wyoming national forests and is presently making a more intensive inventory. It is known that watershed rehabilitation work is needed on 69,000 acres and 1,600 miles of gullies, roads, and streams on these national forests alone. Soil surveys are also needed on 1.5 million acres. Many man-years of work and about $5.5 million are needed to get this job done. This does not include work on other Federal, State, and private watershed lands where rehabilitation work is needed.

An example of reforestation work needed is the Crandall Creek area on the Shoshone National Forest in northwestern Wyoming. Here about 40,000 acres of timber was burned in 1935, and natural regeneration has been very slow and scattered. Not a tree has been planted since the fire with the result that quantities of soil and debris wash off the slopes after every rainstorm and every spring during the snowmelt. There are other areas in the forested part of Wyoming where the same situation prevails.

In the early days, the pioneers made a practice of dragging trees behind their wagons to act as a brake on steep slopes. Today these skid trails are deep gullies and still eroding. Hundreds of miles of old abandoned roads are eroding heavily. These need to be check dammed and water barred.

Research and soil surveys are badly needed. Although some research on how to increase water yield and stop overland flow of water is being carried on, the size of the program is extremely inadequate. Since watershed management research is closely related to range and timber management research, a stepped-up watershed research program would have value in these fields as well.

More research would apply to such things as how water yields can be increased through various methods of tree cutting, how to manage snowfields to trap snow and prolong runoff, effects of changing vegetative types such as sagebrush to grass; and many other similar problems. Some of these studies are already underway but only in a small way, and the research effort needs to be increased four or five times over.

Soil surveys are the foundation upon which watershed land management is based. Very little of this work has been done; especially in the mountainous part of Wyoming where most of the water is produced. To get a good soil survey completed in Wyoming would require many man-years work and the starting date is long past due.

Wyoming contains the headwaters of several great river basins such as the Missouri, the Columbia, and the Colorado. Water from Wyoming highlands affects communities and people hundreds of miles outside the State boundary. For this reason, watershed protection and improvement to stop and prevent floods and erosion and improve usable water yields is of great importance to other parts of the United States as well as to Wyoming. As an example, in the Platte River system which is part of the Missouri, 41 percent of the average

annual flow comes from 11 percent of the area and this area is forest land, much of it in Wyoming.

With good planning and management, the watershed lands in Wyoming can produce high yields of silt-free water and at the same time they can produce timber products, provide forage for livestock and wildlife and furnish recreation opportunities for millions of people. This is known as multiple-use planning and management. It is presently being applied by the U.S. Forest Service on national forest lands, and its use is increasingly being expanded to include all lands by agencies of both the State and the Federal Goverments. Water is of utmost importance and so valuable that a dollars and cents sign can hardly be put upon it—in Wyoming and elsewhere throughout the West. Any investment in watershed improvements, watershed research, and watershed rehabilitation will provide far-reaching benefits for many years and for many people. Such an investment in Wyoming is urgently needed. Thank you.

Mr. JOHNSON. I will keep this short.

The gist of my statement is we need more research in the vegetative manipulation of our high altitude watersheds and from that research would stem a rehabilitation program not only of vegetation of the forest area but of the grasslands as well and of the areas above timber line which is the snowpack areas.

I believe that is all I have to say.

Senator KUCHEL. That is a most interesting point. Thank you.

Senator MCGEE. Your suggestion of more research, what you call vegetative manipulation at high altitude would be with the thought of holding the water where it is in its origination?

Mr. JOHNSON. That is right, Senator. The best place to store water is in the ground and through the proper manipulation of this vegetative cover we can put that water into the ground. It has been proven we have not enough research on that.

Senator MCGEE. Thank you very much.

Mr. Arthur E. Williamson.

STATEMENT OF ARTHUR E. WILLIAMSON, DIRECTOR OF THE DIVISION OF ENVIRONMENTAL SANITATION, PUBLIC HEALTH DEPARTMENT

Mr. WILLIAMSON. Senator Kuchel, Senator McGee, my name is Arthur E. Williamson and I appear here today representing the Wyoming Department of Public Health. I am employed in that department in the capacity of director of the division of sanitation.

The Wyoming Department of Public Health is interested in several aspects of water resources, probably the primary one being that we are responsible to a great extent for potable water supplies for municipal, industrial, and private uses. We work throughout the State in the development of these safe and adequate supplies.

Of course another item of prime importance is that the health department is responsible for pollution control of all surface water in the State.

I might say that we have inaugurated and carried out to a great extent a plan of pollution control in the State and at this time there is very little municipal or industrial pollution occurring.

At the present time our public water supplies are supplying an average of approximately 60 million gallons per day, with maximum days approaching 200 m.g.d. This is not a large volume of water, when compared to the usage of some of the large metropolitan areas; however, per capita-wise, the use is 2 to 2½ times the national average.

Herein lies one of the problems to be faced in this State. At the present time some of our communities are using water greatly in excess of what they should. There must be some definite means of regulation to control usage of water.

Senator KUCHEL. Let me ask you something. As a citizen you would prefer to have that type of control in your own city and your own State, would you not?

Mr. WILLIAMSON. Yes, I believe it is a State responsibility and that is where the thing comes. Right now the cities cannot carry out really effective control due to rate regulations. In other words, raising water rates is not a recognized method of water conservation.

Some of our cities, as we say, are reporting water shortages, but when we look at water usage we find it is in the vicinity of two to four times the normal usage. In many of these cases, if we cannot establish a regulation, they will have sufficient water for 20 years. We can stretch the existing supply.

Some few municipalities are faced with actual water shortages at this time. In other words, they have utilized the full potential of the present area and they are faced with going quite large distances where the economy of it becomes quite burdensome to develop really adequate supplies. Some of them are faced with marginal supplies due to chemical content of water which is one of the things. To go into desalination they are going to have to use pretty rough chemical quality.

Since the health department is responsible for pollution control, the problem of maintaining water quality is always with us. It is one of the problems we have to fight day in and day out. Every new installation brings about its problem of water quality. Any use we make of water, whether agricultural, industrial, or municipal use is going to have a degrading effect on the physical and chemical qualities of the water. So that is one of the things on which I think Federal work can probably be carried out. We can improve the qualities of water only so far with adequate treatment. There will always be a need for dilution water to maintain water quality. I am thinking in this respect, that you probably should give some consideration in our major water developments to the utilization of what we would call nonreimbursable funds to provide dilution of maintaining quality. I realize there are going to be problems in the States where we have prior water rights, but certainly in other places where you have a more populous area it will work out very well. I know we have had considerable discussion at the Washington level on this matter of nonreimbursable funds in Federal construction programs.

The health department, of course, is definitely interested in the recreational aspects of water. They are all influenced by water quality. We have to try to maintain recreational aspects of water so it can be used. Again we are facing a rapid change, rapid increase in recreational use and it brings about the matter of water quality in its use.

There is certainly need in this State to explore underground water resources. We do not know particularly from the potable aspect just what we have in the way of water resources. Likewise, there should be some study made as to the possibility of underground water storage. I think that is one of the things that might pay off if we could use ex-

cess flows stored underground for later reclamation. We certainly eliminated the problem of evaporation.

Since the amount of fresh water available to the United States is a constant figure year in, year out and since our predictions at our present rate of usage indicate we will have used up that amount around 2000 A.D., it follows there is a great need for valid criteria for the actual economic worth of an acre-foot of water. That is one of the things that I have tried to arrive at. As far as I know, the University of California is the only one really making a study on it at this time. What is the value of an acre-foot of water when it is used for a specific purpose? The States very soon are going to have to be faced with making decisions as to how this water is going to be used since there is only so much of it. Unless somebody can put a dollar-and-cents sign on it—say this water is worth so much used like this—it is going to be hard to make decisions. I think it is time somebody made extended research in that matter; what is that water actually worth when used in a given method? Then it would be very easy, I think, for a State to make a decision that we can switch water from here to here and affect our overall economy maybe four or five times. That is another proposed research project.

Of course the multiple use of water would still be considered under such a criteria and through the use of such a criteria the economic value of multiple use would be immediately recognized in that way.

I think those are about all the comments I have and wish to thank the committee for the privilege of appearing here. Certainly the resources of our department are available to this committee in any way in which we can help.

Senator McGee. Thank you very much, Mr. Williamson, for your spendid statement.

(The prepared statement follows:)

TESTIMONY OF A. E. WILLIAMSON

My name is Arthur E. Williamson and I appear here today representing the Wyoming Department of Public Health. I am employed by the health department in the capacity of director of the division of environmental sanitation.

The Wyoming Department of Public Health is interested in the water resources of the State from several aspects. One important factor in this field is the supplying and maintaining of potable water supplies for municipal, industrial, and private uses. The department is responsible for the promotion and development of safe and adequate water supplies throughout the State.

Another important item in the health department activities is that the department is responsible for the control of pollution of all waters in the State. A State plan for pollution abatement has been formulated and carried out to the extent that very little municipal or industrial pollution exists at this time.

At the present time, the public water supplies in the State are supplying an average of approximately 60 million gallons per day, with maximum days approaching 200 million gallons per day. This is not a large volume of water, when compared to the usage of some of the large metropolitan areas; however, per capitawise, the use is 2 to 2½ times the national average.

Herein lies one of the problems to be faced in this State. A number of communities have reported and faced water shortages, yet their annual per capita consumption may be in the range of 2 to 4 times the national per capita average. The cities must develop a more effective means of regulating water use and the people must realize that it is fast becoming impossible to use as much water as they have in the past. In many instances effective regulation could stretch the present water supply some 20 years into the future.

Some few municipalities are faced with actual water shortages at this time. The present sources are limited and additional supplies will necessitate a large expenditure of funds. Some communities are using water sources that are marginal due to the chemical quality of the water.

Since the health department is responsible for pollution control, the problem of maintaining water quality throughout the State is a primary program. Practically every usage of water, whether it be municipal, agriculture or industrial, degrades the physical and chemical qualities of the water. Although the quality of water in our State is relatively good when compared to more populous areas, we are continuously fighting the problem of water quality with each new development. Over and above adequate treatment of wastes, water quality can be maintained by providing impounded water of good quality for dilution. Some problems are encountered with this type of use in States that have the prior use water rights and have not recognized water for dilution purposes as a preferred use. However, some considertaion should be given to provide for nonreimbursable storage in major impoundments for the purpose of maintaining water quality. In the matter of water quality, agriculture exerts an equal or greater influence on the degradation of the physical and chemical qualities than municipal or industrial wastes.

The health department is definitely interested in the recreational aspects of water use, especially as influenced by water quality. Recreational use of our water resources is increasing at a very rapid rate and we are faced with the problem of determining and maintaining a safe water quality for this purpose.

There is certainly a need in this State to explore our underground water resources. As a source of potable water supplies, underground waters are to be desired. Some study should be made as to the possibility of underground storage or recharge of excess flows.

Since the amount of fresh water available to the United States is a constant figure year after year, and since predictions are that at the present rate of usage, this resource will be completely utilized by the year 2000 A.D., it follows that there is a great need for a valid criteria to measure the economic value of an acre-foot of water when used for various purposes. As a State approaches complete utilization of its water resources, some decisions must be made as to how the existing waters will be used. If the greatest economic benefit is to be obtained then preferential use will have to be based upon some criteria that shows the relative economic value.

The multiple use of water would still be considered under such a criteria and through the use of such a criteria the economic value of multiple use would be immediately recognized.

I wish to thank the committee for the privilege of appearing at this hearing. The resources and data available through the health department are at your disposal and we would be pleased to provide any service that we could to help in this matter.

Senator McGee. Are there any other questions from the committee?

The next witness is Mr. Milton Coffman, representing the Wyoming Natural Resource Board.

I might say that Milt has contributed to the resource development of Colorado—and Milt, Jr., and his wife, are they still down in Denver?

Mr. Coffman. No, they are back in Casper.

Senator McGee. I will change my story. They are back where they belong.

STATEMENT OF MILTON COFFMAN, WYOMING NATURAL RESOURCE BOARD

Mr. Coffman. Mr. Chairman, Senator Kerr, Senator McGee, Senator Kuchel and Senator Young:

I am Milton Coffman, representing the Wyoming Natural Resource Board. We assure you that we are very appreciative of the fact that the U.S. Senate is recognizing our water problems and has come to the West to find out at first hand about them.

In giving a little background on our board, I might say that we are charged by law to develop the water, minerals, forest, and industrial resources of our State.

I will only hit two points because of time. Our statement is on file with you.

The natural resource board strongly believes in planning for the future development of these important resources. We cannot foresee the future time when water as a commodity may have a fixed value such as fuels and where its administration can almost solely determine the economic maintenance and growth of our State's economy.

I might digress a moment here, if I could have Senator Kerr's ear—up in Casper we drilled two wells this summer and we prayed we wouldn't hit oil. We found two great water wells up there at a depth of around 5,000 feet and if that doesn't dramatize the importance of water as a commodity out here in the West, I think nothing else does. In fact, the oil boys found out they were dealing with two different fluids, the water and oil. They got into some problems all right. They sand tracked one and went through the oil routine and it finally turned out all right. But it does, I think, bring us a fact that water is that valuable a commodity in our State.

I just thought I might bring that to you.

The CHAIRMAN. I think Wyoming is going to be one of the great oil-and-gas producing States in the Nation. But I am positive in my own conviction that the development of your water resources would bring you more economic expansion and increased prosperity than both the oil and gas.

Mr. COFFMAN. I appreciate that. And it may become a time when the oil drilling companies will become water drilling companies, who knows.

The CHAIRMAN. They are a pretty alert bunch.

Mr. COFFMAN. Knowing your interest in Wyoming and interest in uranium, I am sure maybe you will be looking at it yourself.

Mr. KUCHEL. Is that based, Mr. Chairman, on your feeling that a fellow needs a drink of water before he can go out and drive his automobile and put gasoline in it?

The CHAIRMAN. I tell you, when he runs out of water, he won't have much use for gasoline.

Mr. COFFMAN. I might go on here and hit another point.

The first and foremost matter in our board and in our entire State's thinking is the determination of the right of the States over the use and control of water within its borders. Without such control, planning is virtually impossible. We insist that in the act of admission and in our State constitution, both of which were affirmed by the Congress of the United States, title to the water of the State was vested to our State to be appropriated for proper use under the laws of our State. Action on this matter must be forthcoming in the next session of Congress if serious hampering of overall development plans of the Western States is to be avoided. It is our understanding that this subject is one that the committee has eliminated from formal consideration due to the pending of corrective legislation before the separate congressional Houses. Nevertheless, our board would respectfully point out that the Senators on this committee will have performed their work in vain if this legislation is not forthcoming.

Whatever is said before this group can have no application without prior congressional action in solving this basic problem by the reaffirmation of State's water rights.

There is also a second basic problem which we feel should be of major concern to this committee. Constant consideration should be given to the fundamental philosophy of multiple use, for this, to a large degree, is reflected in various types of legislative proposals, such as the so-called wilderness bills. This type of legislation restricts water development through nonaccess to large land areas of importance, in favor of minor single-purpose use or nonuse.

The lack of planning may affect tremendously the future water development of our State and Nation. Without having the right to control and use water in our State, or to be denied the use of large land areas, planning would seem fruitless and indeed of no value. We sincerely hope this committee will take cognizance of the importance of these two matters as of continuing as well as current interest and recognize that they must be considered a part of the committee's activities since they provide an essential part of the foundation for anything else that is planned or suggested.

It would appear to us that the prime need for the State of Wyoming, in relationship to water development in the 1980's and beyond, is the formulation of a long-term plan based upon a comprehensive inventory of present water resources.

Approximately 50 percent of Wyoming is controlled by governmental agencies. To mention a few, we have Federal programs on the part of the Bureau of Reclamation, the Soil Conservation Service, the U.S. Geological Survey, the U.S. Forest Service, the Bureau of Land Management, the U.S. Public Health Service and the Agricultural Research Service. All of these agencies are in some way or other connected with water progress. The various activities of these agencies place these different groups in control of related aspects of the State's water program and in many cases has resulted in overlapping responsibility in the same general areas. Each of these programs conducted by these respective agencies is, without question, of some value to the State of Wyoming and certainly of interest.

There exists a very dire need for careful planning and sound decisions in the future if an adequate water supply is to be assured to take care of the needs of the people in the future. Not only is this important to the future of the State of Wyoming, but since Wyoming contains the headwaters of several great river basins, such as the Missouri, the Columbia, and the Colorado, development of the water from Wyoming highlands affects communities and peoples hundreds of miles outside the State boundaries.

That brings us to the point where we are fearful of Federal domination and encroachment in our State's rights. If we should become fully federalized, human nature being such that it is, the exploitation by the bigger populated centers would certainly be to our detriment and we have seen that work through the past years. That is why we are concerned with the fact that we might be losing some of our water rights given to us by the Constitution.

Now, then, I have touched a bit about the right and use to control the water within our borders and we hope to take the responsibility and want the responsibility to plan our own waters.

I hope that in the Senate's investigation that they will keep that in mind, that we on the ground floor in our State, as in other States, certainly feel that we have the best plan and can produce the best plan for our utilization of water rights.

I might digress to just talk about money for a moment.

I noticed a great to do in our State recently regarding the amount of money that the Federal Government gave to the State of Wyoming, some $6 million, and a picture was taken showing the Federal Government's man giving the money to the State but nothing was said about the money retained in Washington. I might just mention that looking over some figures I think it was 1956, that the State of Wyoming produced to the Federal Government $26 million, the internal revenue produced some $65,600,000, which is a figure of around $91 million. And all the grants and Federal subsidies that were returned from the Federal Government was only some $23 million.

I might say to Senator McGee, trotting the Halls of Congress, I don't think we have any inferiority complex at all in regards to trying to get money back from the Federal Government, because we are losing the break in the change. That hooks up with water in just this way. Water is money. Certainly, where we produce this amount of money for Washington, and when their hot hands get on it, we only get about two bits back out of every dollar we send so I feel we could very well have our development of our natural resources, either federally or State, done with this money.

I might say, in closing—time is getting short—that we appreciate very much the committee and the congressional attitude, to complete the reclamation program successful to Wyoming's development. We hope the Congress will continue to appropriate sufficient funds to develop the reclamation programs already outlined and approved by the State of Wyoming.

We hope that nothing will deter the prompt completion of these necessary projects.

Thank you very much.

Senator McGee. Any questions from members of the committee?

Mr. Coffman. Any questions?

Senator McGee. Thank you very much, Milt.

(The prepared statement follows:)

TESTIMONY OF MILTON COFFMAN

My name is Milton Coffman and my address is Box 238, Casper, Wyo. I appear here today representing the Wyoming Natural Resource Board, a duly authorized State commission, of which I am a member.

The Wyoming Natural Resource Board is a bipartisan commission, appointed by the Governor and consisting of nine members representing each of the seven judicial districts and two members from the State-at-large. The Governor, the State engineer, president of the university, highway commissioner, game and fish commissioner, and the agriculture commissioner serve as ex officio members without voting power. Members of our board receive no compensation. The natural resource board has a full-time staff with offices at 215 Supreme Court Building, Cheyenne, Wyo.

Our board is charged by law with the fullest development of our State's natural resources, including water, minerals, forests, and industry.

The board maintains a staff for water and industrial development, including a water division with full-time water development engineers. Our activities in the water development field have been extremely broad and include the building of supplementary storage projects financed by money available from our board by loan to private individuals or groups and through the State farm loan board.

A fundamental belief of our board is that water is the key to the present and future development of our State. Wyoming is, as yet, relatively undeveloped. We are presently experiencing increasing interest by many facets of national industry and our water, and its present and future supply, loom among the top considerations by these companies. Future development to the optimum extent will depend, in a large part, on the fullest development and utilization of our water resources.

Administration of Wyoming water is, by constitution, the duty of the State engineer. Development of that water is the duty, by statute, of our board. Statutes place the functions of the Interstate Streams Commissioner, who is in charge of all State compact agreements, within the legal framework of our board. The board has relegated this duty to the State engineer, as an ex-officio member of our board, in the interest of coordinated administration and development.

The Natural Resource Board strongly believes in planning for the future development of this important resource. We can foresee the future time when water, as a commodity, may have a fixed value, such as fuels, and where its administration can almost solely determine the economic maintenance and growth of our State's economy.

The first and foremost matter in our board and in our entire State's thinking is the determination of the right of the States over the use and control of water within its borders. Without such control, planning is virtually impossible. We insist that in the act of admission and in our State constitution, both of which were affirmed by the Congress of the United States, title to the water of the State was vested to our State to be appropriated for proper use under the laws of our State. Action on this matter must be forth coming in the next session of Congress if serious hampering of overall development plans of the Western States is to be avoided. It is our understanding that this subject is one that the committee has eliminated from formal consideration due to the pending of corrective legislation before the separate congressional houses. Nevertheless, our board would respectfully point out that the Senators on this committee will have performed their work in vain if this legislation is not forthcoming. Whatever is said before this group can have no application without prior congressional action in solving this basic problem by the reaffirmation of State's water rights.

There is also a second basic problem which we feel should be of major concern to this committee. Constant consideration should be given to the fundamental philosophy of multiple use, for this to a large degree, is reflected in various types of legislative proposals, such as the so-called Wilderness bills. This type of legislation restricts water development through nonaccess to large land areas of importance, in favor of minor single purpose use or nonuse.

The lack of planning may affect tremendously the future water development of our State and Nation. Without having the right to control and use water in our State, or to be denied the use of large land areas, planning would seem fruitless and indeed of no value. We sincerely hope this committee will take cognizance of the importance of these two matters as of continuing as well as current interest and recognize that they must be considered a part of the committee's activities since they provide an essential part of the foundation for anything else that is planned or suggested.

It would appear to us that the prime need for the State of Wyoming, in relationship to water development in the 1980's and beyond, is the formulation of a long-term plan based upon a comprehensive inventory of present water resources.

Approximately 50 percent of Wyoming is controlled by governmental agencies. To mention a few, we have Federal programs on the part of the Bureau of Reclamation, the Soil Conservation Service, the U.S. Geological Survey, the U.S. Forest Service, the Bureau of Land Management, the U.S. Public Health Service and the Agricultural Research Service. All of these agencies are in some way or other connected with water progress. The various activities of these agencies place these different groups in control of related aspects of the State's water program and in many cases has resulted in overlapping responsibility in the same general areas. Each of these programs conducted by these respective agencies is, without question, of some value to the State of Wyoming and certainly of interest.

There exists a very dire need for careful planning and sound decisions in the future if an adequate water supply is to be assured to take care of the needs of the people in the future. Not only is this important to the future of the

State of Wyoming, but since Wyoming contains the headwaters of several great river basins, such as the Missouri, the Columbia, and the Colorado, development of the water from Wyoming highlands affects communities and people hundreds of miles outside the State boundaries.

Each agency, now conducting programs in Wyoming, attempts to advise the respective officials in the State as to their activities and objectives of the program. However, as we view these Federal programs in the overall, it is apparent that such programs do lack coordination between respective agencies and therefore, to some degree, result in overlapping and duplication of effort.

It has been our experience over the past several years that there are agencies that are unacquainted with the activities of related groups. We very earnestly believe that such a condition cannot continue to exist if an orderly program of resource development is to transpire in the future of the State.

It has been pointed out by various experts that increased population growth will bring about such increased commitments by 1975 for water that a real problem will exist and that by the year 2000 water resources and quantities as we know them today will be fully utilized. As we near the fullest utilization of present water resources, it will be necessary to search further into the matters of technology that this committee is investigating. It will also be necessary that every step from this year forward be taken in complete coordination with every other activity in order that the optimum development take place; that each activity in related fields is put in the proper perspective; that future provisions and additions to present projects and activities be planned for; and that detrimental steps are not taken for immediate actions when future effects will have an overriding value. Some means should be evolved to cut through red tape when various agencies are involved in water development.

We have already intimated that the State of Wyoming has the responsibility of leadership in this field. If water is to be a matter of State use and control, and implemented through interstate commissions, such planning must indeed be controlled by the State and must have the ultimate in cooperation by various Federal agencies concerned.

The State has the right to use and control the waters within its borders and it should and must accept the responsibility for the development of these waters for the best usage, not only for the people of the State of Wyoming, but for the Nation as a whole. Because of the increased interest in water needs, the time is becoming much more critical that such a total coordinated program be initiated under State direction.

It is, of course, quite probable that specific appropriations, both from the State and Federal level might be necessary to carry out the overall program that can be foreseen to obtain the necessary development in this regard. All development in Wyoming's future, as well as in the future of other States in the West, will depend upon this water development. It will become increasingly necessary that all information and all development be concentrated and coordinated: that all agencies concerned, Federal and State, be fully informed of the overall plan; that implementation of the plan can be obtained without conflict of interests and that sufficient information would be obtainable; that the general public be educated to the recognition of the common needs as regards to better utilization, control and understanding of this most basic resource.

We believe most sincerely that in order to prepare for the future water usage in Wyoming, that careful and intelligent inventory must first be made, and then a careful and intelligent plan must be made to activate the water development in order to obtain the maximum utilization of this resource for its future needs. In order to prepare for this type of activity, there must not be interference on the part of the Federal Government in respect to the water right or the limiting of the use by wilderness or single purpose uses. We believe that the State must take the strong leadership in this field for future planning of our water development with the utmost cooperation and help of the various Federal agencies concerned, working with and under the control of an overall State policy. Due to problems similar to those outlined above, many other States have found it necessary, as has Wyoming, to establish a single State agency for overall development of their natural resources and to obtain a coordinated Federal and State program. We are most interested for this committee to understand that the preparation of an exact coordination plan is not our purpose, but rather that we are endorsing the belief that some plan must be developed in view of the indicated future needs.

We cannot continue on a piecemeal method of development with the many State and Federal agencies going their separate ways without putting each individual proposal and activity in its proper perspective. We must have cooperation and coordinated effort on the part of all concerned in order, not only to prepare a proper inventory, but to prepare a plan which will guide the development of the water resources for the future.

We can also foresee the future need of an expanded development of underground water information which could well be a part of the overall inventory plan for our State. It is quite apparent to us that the overall inventory should include a collection and assimilation into other materials, the availability and nature of the underground water supplies available in our State.

The redistribution of water throughout the State also should be put into proper perspective.

All of these matters need attention in the future, but it is indeed difficult to make any concrete suggestions in connection with the subject under consideration by this committee when there is insufficient knowledge available to us to even estimate the amount of work, the amount of money and the type of studies that are needed to make the practical determinations for future use.

There is no question in our minds that such matters as vegetation management, weather modification, evaporation reduction, salination and many others need further study. The nature of the application of each one of these study areas should be adapted to the individual needs of the State and perhaps determinations made relative to their use by watershed areas. We would certainly endorse the continued general investigation and research on these particular lines. However, such research is of little or no value unless practical application can be made. To this extent an overall inventory and cause and effect study, as we have mentioned in this testimony, is an essential matter.

First, however, a relook appears necessary at existing and pending programs to realize the overall objectives toward a "first things first" approach. We believe the program we have outlined can be inaugurated without institution of additional programs or the formation of additional agencies or bureaus.

The last legislature took a far-reaching step in looking into the future of Wyoming's needs when it passed a bill permitting the Wyoming Natural Resource Board to enter into contract with the United States, or its agent, for the acquisition of storage space in the Fontenelle Reservoir of the Seedskadee project under the Water Supply Act of 1958 (Public Law 85–100, title III), making possible municipal and industrial storage. The bill passed by the Wyoming Legislature delegated the responsibility for determining the amount of storage that could be beneficially used by the State of Wyoming to the natural resource board. The upper limits imposed on this storage by the Wyoming Legislature were 60,000 acre-feet and/or $900,000. At the present time the natural resource board is conducting a study to ascertain what amount of storage is justifiable in this particular project. The bill also provides the machinery necessary for future storage in similar cases in other such projects. However, the finances were arranged only for the project mentioned. A study for a determination of participation in the Fontenelle project is underway. It is expected that in the near future the board will consider these reports and make their recommendations on this particular project.

However, this action on the part of the Wyoming Legislature is indicative that the State of Wyoming is definitely interested in the development of water for municipal and industrial use and the Water Supply Act of 1958 enacted by the Congress of the United States is a feature which will definitely help our State's water program.

As a part of this study the board made economic determinations as to the industrial potential of the Green River Basin of Wyoming. Projections were made relative to the municipal and industrial growth to be anticipated in this area by 1975. As a result, a relatively clear picture has been obtained of the availability of water in the area and the industrial development potential in the foreseeable future. Allowances have also been made for the normal growth of the area and larger and more significant development that is anticipated to occur. This activity could become one part of an overall development inventory and plan.

For example, Seedskadee is a U.S. Bureau of Reclamation project. The Fontenelle study and the wildlife refuge shows the desirability between the Bureau and the State in such matters. Because of the undeveloped resources in this area, it would appear that the Green River Basin has an excellent industrial growth potential. This applies similarly to other areas of Wyoming.

The natural resource board, as a part of an overall program, is interested in many additional aspects toward the improvement of the water supply. Mountain soils in Wyoming are relatively unstable with natural geologic erosion still prevalent in many places. There has been some accelerated erosion due to fires and other causes. There are many opportunities existing to improve Wyoming watersheds through a soil and watershed rehabilitation program. In places such a program is urgently needed. Reforestation of burns, range seeding, range fencing, range water developments, check dams and gullies, water bars and old roads are some of the needed work improvements. Contour trenching and changing vegetative cover from weeds and sagebrush to grass would reduce the rate of surface runoff, floods and erosion simultaneously, improving range conditions. Some studies relative to this particular subject have been done by the Forest Service, Geological Survey and Bureau of Land Management. The natural resource board, with the University of Wyoming, has also engaged in some studies along these lines.

These studies, with the cooperation of the university, have been approved for a statewide study on a 10-year basis and the contracts for these studies have been signed and are now being implemented by the university. The first of these studies were begun by the natural resource board and the university in 1951 on the Big Horn Mountains. Since that time it has been extended to a second area, the Jackson Hole area, and studies began this year on two other locations.

Studies are taking place, not only on the national forests, but on other Federal lands as well. Cooperation has been given this program both by the Forest Service and by the Bureau of Land Management.

With good planning and management, the watershed lands in Wyoming can produce high yields of silt-free water and at the same time they can produce timber products, provide forage for livestock and wildlife and furnish recreation opportunities for millions of people. This is known as multiple-use planning and management. It is used by the Forest Service on national forest lands, and its use should be extended to all lands. Water is of utmost importance and so valuable that a dollars and cents sign can hardly be put upon it, in Wyoming and elsewhere throughout the West. Any investment in watershed improvement, watershed research and watershed rehabilitation will provide far-reaching benefits for many years and for many people.

Once again in the above we have referred to multiple use. The natural resource board is always ready to be cooperative in arranging multiple use on both land and water. Recently when the Seedskadee project was under consideration, it was our pleasure to work with sportsmen's groups and ranchers interested in the Bureau of Reclamation in establishing areas for fish and wildlife purposes on the Seedskadee project, and with complete success. This attitude is relatively prevalent throughout the State. In the city of Cheyenne, for example, the city reservoirs have been stocked by the State game and fish commission for use by a large number of residents of the area each year. This is another example of how increased use for multiple purposes can be made if careful planning is involved.

May we also express to this committee the natural resource board's appreciation for the congressional attitude to complete the reclamation program so essential to the Wyoming's development. We hope that the Congress will continue to appropriate sufficient funds to develop the reclamation programs already outlined and approved by the State of Wyoming. We hope that nothing will deter the prompt completion of these necessary projects.

Thank you for your kindness and consideration in allowing us to testify before this committee. Our staff and our board is at your service in any matter in which we can be of assistance.

Thank you.

Senator McGee. Now, Mr. Reuben Anderson, president of the Wyoming Farm Bureau Federation.

STATEMENT OF REUBEN V. ANDERSON, PRESIDENT, WYOMING FARM BUREAU FEDERATION

Mr. ANDERSON. Mr. Chairman, distinguished Senators from the Senate Select Committee on National Water Resources:

We have several representatives here from several counties and I understand that the time is so short that they cannot be heard from. Mr. Ciril D. Cranney, irrigation chairman of the Southwest District Federation; the Carbon County Farm Bureau, the Albany County Farm Bureau, the Sweetwater County Farm Bureau, and the Uinta County Farm Bureau are present.

We have gone over all these reports. They are very fine reports and they will, of course, be filed with your committee.

If the committee could give a few minutes to the Sweetwater County Farm Bureau, who have a very special problem out there, I think it would be very fine.

The Wyoming Farm Bureau Federation which is Wyoming's largest voluntary agricultural organization, is very appreciative for the opportunity to appear here today and give testimony on our most important resource.

The Wyoming Farm Bureal Federation is comprised of 23 county farm bureau units and has a total family membership of 8,934 in 1959. For the past 14 years membership numbers have increased. Agricultural people of this State have realized that only through organization can we accomplish those things that must be done. Water is a subject that is continually being given consideration in our community, county, and State meetings, because it is, in fact, the lifeblood of Wyoming's economy.

Since your committee is charged with studying the broad subject of water resources and no specific subject was announced for this hearing, the Wyoming Farm Bureau Federation intends to cover only some of the more important phases as we see them.

We are pleased to see Senators, others than those from the Western States on this committee and we hope you might more fully understand our problems. Surely, after a general acquaintance with, and appreciation of these problems, the nonwestern Senators and Congressmen will be quick to support needed legislation.

Uppermost in the minds of the ranchers and farmers as well as others of this State is the supremacy of State's water laws. We are primarily concerned about sovereignty of Wyoming water laws, but we recognize that Federal preemption, regardless of where it occurs, has a direct bearing on us.

The Wyoming Farm Bureau Federation holds that the single, most important function your Select Committee on National Water Resources can perform for the people of Wyoming and the people of the Western States is the reconfirmation of the supremacy of State water laws. Not only would this be in the best interests of the West but also in the best interests of the Nation as a whole because the economic development and the maintenance of property values are dependent upon a clear and unmistakable authority to acquire and use water rights.

Since the 1940's, actions of some of the departments of the executive branch of the Federal Government and the decisions of the U.S.

Supreme Court have thrown doubt upon validity of a water right acquired under State law.

Prior to this time, the principle of supremacy of Western State water laws was recognized by both Federal law and State law. Congress passed the first Federal legislation ratifying the principle of State control of water rights in 1866. This position was reaffirmed by the Congress in 1870 and in 1877 Congress passed the Desert Land Act which again definitely reaffirmed the rights of the Western States to legislate on all matters concerning nonnavigable waters within their borders. Since that time, there have been many congressional acts and Supreme Court decisions to support State control and administration of water rights.

The constitution of the State of Wyoming provides that: "The water of all natural streams, springs, lakes or other collections of still water within the boundaries of the State are hereby declared to be the property of the State." Wyoming was admitted to the Union on July 10, 1890. The provisions of our constitution were ratified by the Congress and subsequently signed by the President of the United States. The language of our constitution is clear and unequivocal.

The economy of this State as well as the economy of the other Western States has been built on water rights granted by the respective States under the doctrine of prior appropriation. It is our understanding that the support of the Federal supremacy theory is based primarily on Supreme Court decisions and Justice Department interpretations. Congress has the sole authority to correct this situation through legislation and in turn reaffirm State authority and responsibilty in water right matters.

We certainly urge that you do your utmost to reaffirm the State water rights.

Another very important issue that is receiving consideration by the Congress and one with which this select committee should be concerned is the wilderness preservation proposals. This issue properly comes under your study because, among other things, the bill, S. 1123, provided for exclusion of natural resource development, including reservoirs, timbering, mining, and so on, except by Presidential decree.

Approximately 2.5 million acres within the borders of Wyoming were scheduled to be included in the wilderness areas. Generally speaking these areas are the headwaters of the major rivers of the West. By setting these areas aside for a single purpose, another roadblock would be thrown in the way of watershed management and water resource development, not to mention the future economic growth of Wyoming and the West. This would further complicate the issue of States rights to control their water resources because the bill's provisions dealing with this subject were ambiguous and clouded.

The whole concept of the wilderness bills was away from the multiple-use practice which has served so well for many years. We urge your committee to oppose all legislation designed to lock up resources and impede the upstream water development. Over 50 percent of the land surface of Wyoming is held by the Federal Government and it is conceivable that once a portion of this land is dedicated to a single-use purpose that it would become increasingly difficult to deny further dedications.

We favor the maximum participation of individuals, local agencies, and State agencies in water developments. We believe that States have the major responsibility for determining the available amounts of water and for planning the development and beneficial use of the water. The various Federal Government agencies should assist the States in conducting an inventory and in planning the water use. We are opposed to Federal domination of water resource development. The Federal Government's responsibility in inventorying and planning the use of the water should be advisory only.

Here again we refer to the Wyoming constitution—

waters * * * are hereby declared to be the property of the State.

It is clear that the founders of our constitution believed that with State ownership of the water, it would be put to the most beneficial use for all the people of the State. Our State laws says:

A water right is a right to use the water of the State, when such use has been acquired by the beneficial application of water under the laws * * * (sec. 71–401, Wyoming Compiled Statutes, 1945, as amended).

The Wyoming law further states in section 71–402, Wyoming Compiled Statutes, 1945, as amended:

Water rights are hereby defined as follows according to use * * *.

These uses are changed from time to time by the legislature as the use dictates. At present the law reads:

Preferred water uses shall have preference rights in the following order. First, water for drinking purposes for both man and beast; second, water for municipal purposes; third, water for the use of steam engines and general railway use, water for culinary, laundry, bathing, refrigerating (including the manufacture of ice), for steam and hot water heating plants, and steam powerplants; and fourth, industrial purposes. The use of water for irrigation shall be superior and preferred to any use where water turbines or impulse water wheels are installed for power purposes; provided, however, that the preferred use of steam powerplants and industrial purposes herein granted shall not be construed to give the right of condemnation.

In Wyoming law we believe Wyoming has demonstrated its ability to be flexible and thereby meet the needs of her people, in all phases of water resources.

Since we in Wyoming have the natural resource board, which is charged with the responsibility of development of our State's natural resources, it would appear that they should be given prime responsibility. The resource board would then be in a position to coordinate the work of all agencies and groups, first in making the inventory, secondly in making first-hand recommendations, both to the Federal and State legislative bodies and finally to implementing the plans for the development of our water resources. A prolonged and expensive inventory is not what we are proposing. We feel it is a matter of compiling information about our water resources which is presently known by all the various Federal agencies in the State, our land-grant college and our State agencies. We believe that it is imperative that a State agency such as the natural resource board take leadership in this activity. Two of the most important reasons are: first, the water in the live rivers originating in Wyoming and flowing out of the State are presently divided by interstate compacts, thus we know about what our share of the water is and we are not interested in any Federal Government reallocation, and secondly, we think that the

people of the State of Wyoming working with the resident Federal bureau employees will do a much better job of developing our water resources to meet our needs than will any group, legislative or otherwise who reside outside of the State. Among other things, an impartial and objective analysis of proposed irrigation projects could be made. Economic feasibility could be determined, acreage limitations could be geared to a realistic family unit, and the size of the total project development could be coordinated with the available supply of water. We are truly sorry that we must say that these things are not always being done now.

The 160-acre limitation on reclamation projects is as outmoded as the horse and buggy. First, it is outmoded because a family can no longer make a living on 160 acres, and secondly the areas left to be developed are largely class 3 or poorer land at altitudes of 6,000 feet or more and have short growing seasons. We appreciate the fact that special consideration was given Wyoming's Eden and Seedskadee projects, which are in Sweetwater County that I mentioned before, but the units are still too small to be economic family units.

Senator KUCHEL. What are the units now?

Mr. ANDERSON. I think they are right at 230 acres now.

In this high altitude with short growing seasons and poor land special consideration must be given and who knows better what to do than those who reside close to such areas.

A few years ago we had an attempt by the Bureau of Reclamation to increase the size of a project without providing additional water storage. The bureau's figures showed that the existing project was short of water 1 out of 5 years during the past 20 years. I am proud to say that this extension was protested so loud and long by the people on the project that the extension was dropped.

Recently the Eden project was opened to settlers. By poor reservoir management and below normal water run-off, both the new and old project farmers had inadequate water for this year's crops. The long-range estimates of the amount of water needed to produce crops on this project are too low and until revisions are made the future of every family on this project is in jeopardy.

State control of water resource development is a must if we are to use our water beneficially and keep open the doors of economic opportunity to those who are capable of developing our land and other natural resources.

The Wyoming Farm Bureau Federation thanks you for your consideration of our statement. Please be assured we are willing to assist your committee where and when we can.

Thank you.

Senator MCGEE. Are there any questions of members of this committee?

May I say, Senator Kuchel, that one of the problems you encountered, too, back there in Washington is to try to show someone from Indiana, Iowa or somewhere that the same land laws or the same size of economic units in agriculture do not prevail out in the high country. It is difficult. They try to draft law occasionally that will apply to everybody and they get in trouble with it. That is the point that Mr. Anderson so eloquently made.

Mr. ANDERSON. Thank you.

Senator McGee. Do the other members of your district farm bureau groups, Mr. Anderson, have statements that would go in the record at this point?

Mr. Anderson. Yes. They are the words that I have read. May we have permission to insert them in the record at this point?

Senator McGee. Yes. They may be inserted in the record.

(The prepared statements referred to follow:)

REPORT PREPARED BY CIRIL D. CRANNEY, IRRIGATION CHAIRMAN OF THE SOUTH WEST DISTRICT, WYOMING FARM BUREAU FEDERATION

WATERSHED MANAGEMENT

Mr. Chairman, inasmuch as most of the watersheds in our Western States, are on Federal owned and controlled land; we favor multiple use of these resources such as: Harvesting of matured timber, which would be a waste if it were left to die and become a fire hazard. Controlled grazing by both domestic animals and wild game to the extent that the resources would stand, without permanent damage to the cover which protects our watersheds from erosion during the runoff season.

The development of the mineral resources within the area, and also, properly managed recreational areas within the watersheds. We believe there is a need for an expanded research program in the conservation of water and related land resources.

WATER STORAGE

Because there are a good many undeveloped storage sites in the upper reaches of our watersheds, we recommend; that the Government agencies set up for that purpose make further study and investigation into these possible reservoir sites, with the view of building more dams to be used for storage of irrigation water, and also for the purpose of flood control, the development of power, and also to create more and better recreational areas for use by the public. We feel that this work could be done by the agencies that are already set up for this purpose, such as the Federal Reclamation Service, the Army engineers, and various State agencies set up for the purpose of developing the smaller sites.

LEGISLATION

The principle of supremacy of State water laws in deriving rights to the ownership, distribution, and use of ground and surface waters, has been recognized in most all Western State laws, and the enabling acts by which many of the States were admitted to the Union, the stability of the economy, the property values, and the continued prosperity and development of much of the whole United States is dependent on a continued recognition of the supremacy of State Water laws, and the property rights which have been derived and settled thereunder.

Acts of some of the departments of the executive branch of the Federal Government have thrown doubt upon the sanctity of these principles and the property and human rights protected thereby. We, therefore, urgently recommend the enactment of legislation so clear and unambiguous as to be incapable of evasion by either Executive order or judicial interpretation, and requiring every agency, permittee, licensee, and employee of the Federal Government, as a condition precedent to the taking or use of any water, to acquire a right to the use thereof in conformity with State laws and procedures relating to the control, appropriation, use, or distribution of such water, and defining the water affected by such legislation to include all water originating on federally owned or controlled lands which contribute to flowing or moving surface or ground waters. We support the passage of Federal legislation to recognize the sovereign rights of the States to regulate and control the appropriation, distribution, and use of the waters of the States, and to require compliance with such laws by Federal agencies and their licensees.

POLLUTION CONTROL AND ABATEMENT

One of the greatest assets of the intermountain region is its clear water supply. Water is so definitely tied in with the health, welfare, and pleasures of our citizens and with the whole economic structure of the area as to make high water quality objectives not only desirable but imperative. We encourage and promote a program for the preservation of the surface and ground waters of the basins and the restoration of such waters to the best possible condition consistent with the public health and welfare. The propagation of fish and wildlife, and the domestic, recreational, agricultural, and industrial development of the areas is essential.

STATEMENT AND RECOMMENDATIONS BY THE ALBANY COUNTY FARM BUREAU IRRIGATION COMMITTEE PRESENTED BY MRS. G. E. SUNDBY

Water is one of the necessities of life and the right to use it is a property right which is just as important in our private enterprise system, and in some cases even more important, than a property right in land.

Therefore, it is our belief that when our State was admitted to the Union its constitution stated clearly the waters of all natural streams, springs, lakes, or other collections of still water within the boundaries of the State were thereby declared to be the property of the State. These rights should not be taken from any person without due process of law and adequate compensation.

The original concept of State administration of water rights was built upon judicial decisions of State and Federal courts before any Federal laws were passed relating to the administration of water rights. The fundamental principles of many of these decisions are still recognized as basic water laws.

Congress passed the first Federal legislation ratifying the principle of State administration of water rights in 1866. This position was reaffirmed by the Congress in 1870, and in 1877 Congress passed the Desert Land Act which again definitely reaffirmed the rights of the Western States to legislate on all matters concerning nonnavigable waters within their borders.

From these citations it can definitely be seen that by 1878 a new body of water law had been recognized by the Congress and the Supreme Court and reserved for State administration. Since 1866 there have been at least 17 congressional acts and an equal number of Supreme Court decisions to support State administration and control of water rights.

There are few, if any, congressional acts which definitely support the Federal supremacy theory in water. Actions in support of this doctrine are based on decisions of the Supreme Court and other lower Federal courts and Justice Department interpretations. Congress has the authority and the only authority to enact legislation that will rout this dangerous doctrine.

We the members of the Albany County Farm Bureau Irrigation Committee favor legislation to require Federal agencies (1) to comply with State laws relating to the use of water; (2) to respect private rights to use water established by State authority (the right to use water is a property right: therefore, we urge the passage of H.R. 5555 and S. 1416 which acknowledges authority of the States relating to the control, appropriation, use, or distribution of water within their boundaries); and (3) declare the policy of Congress to recognize such authority in the administration of Federal water programs. Also the passage of S. 851 together with a similar proposal in the House (H.R. 4567) in which section I of these bills would nullify the implication arising from the *Pelton Dam* decision and would adequately protect all uses and appropriations of water acquired pursuant to State law, which uses may be dependent upon water arising from or traversing reserved or withdrawn lands. We further recommend that Wyoming Farm Bureau Federation help to advance the study of a State water inventory. We believe in multiple beneficial use of water by—

A. Reducing surface size and increasing depth of reservoirs to reduce evaporation.

B. Application of chemicals to reduce evaporation.

C. By sealing reservoirs and ditches to prevent seepage loss.

D. By construction of upstream reservoirs.

We further recommend the Wyoming Farm Bureau Federation continue to oppose the wilderness bill.

A. We believe in multiple use of water.

B. We believe in multiple use of natural resources.

C. We believe in recreational use by all people as compared to the few which would be benefited by passage of the wilderness bill.

Report From Uinta County

THE WATERS OF WYOMING

On September 18, 1959, a special meeting of the water users of the Blacks Fork and Smiths Fork Rivers, which are tributaries of the Green River, was called and there were 10 ranchers there representing the 4 communities of Bridger Valley, which are Robertson, Mountainview, Lyman, and Fort Bridger. All were in unanimous agreement that the silent encroachment of Federal Government over our State water laws was a great cause for alarm and we should prepare a statement on how we felt the subject should be dealt with.

We feel that all the natural streams, springs, lakes, underground and still waters within the boundaries of the State shall be the properties of the State of Wyoming, and that Congress shall enact a law to recognize and protect the rights and interests of the State of Wyoming in determining the development of the watershed and of the rivers herein mentioned, and its interest and rights in water utilization and control as well as the preservation of established uses.

We feel that waters within the State, whether they arise or flow through Federal land, shall be governed by the water laws of the State of Wyoming.

We feel that in the event of any condemnation or conflict with the Federal Government over the waters that a referendum of all interested parties shall be called and that a fair and just compensation based on market value be paid to all those concerned, that damage be paid to anyone in any way damaged over the losing of the waters. In a case where a person was to lose some of his alloted water and it would cause his place to be uneconomical to operate he should be paid damages for the balance of his place.

We feel that before another law is passed it should be discussed and worked on by the Senate, our State engineer, and a member of the Supreme Court; thereby making it a law that the court would recognize and no Federal regulation would supersede the State law. It seems we have at the present time 25 laws upholding the rights of the States to make and use State water laws, but the Supreme Court can ignore these 25 laws in favor of the Federal Government. We think the navigability of a stream should be clearly defined whether it is real or could be made navigable.

Now we would like to take a minute to tell you why we feel so strongly on this water issue. In the first place, everytime we get mixed up with the Federal Government we find that they and they alone, will make all the rules, regulations, and redtape under which their projects will operate. The next step is to send in a Government representative to boss the works. Usually this bureaucrat is an adolescent who is an inefficiency expert to supervise organized confusion and the result is really something to wonder at. They make the tower of Babel seem like a highly intelligent affair.

Next we feel that in 1890 when Wyoming was admitted to the Union we came in as a free and equal State and brought to the wedding of the States our own dowry which consisted principally of men and women of the Territory of Wyoming and since then they have been an asset to the Nation. The sons of Wyoming have fought on every battlefield in every war and did it with distinction. The draft boards have found the sons of Wyoming far above the average of the Nation in health, education, and moral standards. Wyoming has sent men to the highest offices in the Nation's Capital and we have been proud of them as they were equal to the best in the Nation. Wyoming was the first in women suffrage, and our State has had the first woman Governor in these United States. Wyoming brought to the Nation its fur industry and for many years it was very profitable to the Nation as Wyoming's streams were full of beaver.

The coal industry has been a very important part of our contribution to the Nation. There is hardly a place in the western United States that hasn't used Wyoming coal and found it of the highest quality.

When the southern cattlemen first trailed the vast herds of cattle north and found Wyoming a cattleman's paradise they immediately adopted Wyoming as their mother State and cattle became king of the West. Wyoming's cattle were counted by the hundreds of thousands and were soon followed by the sheep and today sheep also contribute a large share to the Nation's economy.

Next came the gas and oil industry and in Wyoming plains and mountains new development is taking place every day.

The tourist trade is increasing by leaps and bounds and it is estimated by the Forest Service that in a few years there will be 60 million tourists a year to visit the national forests and monuments. Wyoming will have its share of

that trade too. There is no place today where people are not dreaming and planning on when they too may come to wonderful Wyoming to see the majestic beauty of the Teton Mountains, the unspoiled beauty of the snow capped Uinta Mountains in our vicinity, along with the badlands whose rugged beauty is unequaled by any other national monument, and many others too numerous to mention.

Water has been the key to all of Wyoming's prosperity. The streams of Wyoming furnished the water for the beaver trappers. When the beavers were depleted the homesteaders settled along the streams and made ranches. The cattle and sheep industry needed water and they found it plentiful in Wyoming.

It takes water for industrial development and industry brings people and they too need domestic water otherwise the cities and towns cannot grow.

The Bureau of Reclamation receives from Wyoming about 39 percent of their funds and in return spends about 3 or 4 percent back into the State for water development. In 1934 the people of Uinta County were making plans for a reservoir. The Bureau of Reclamation came in and said that was their business to build reservoirs and that they would do it for us. It was turned over to the bureau and we have waited 25 years and we still cannot see over the top of the bureaucratic redtape to the day when we will have water storage.

Why is Wyoming treated as the illegitimate stepson of the old Spanish territory of Mexico?

Now that is why we are perturbed about water legislation. Water is Wyoming's fortune. Water is our past, present, and future. Water is our life. We ask for intelligent water laws. We have men and women in Uinta County who are capable, who are willing, and who will work to that end.

Wyoming's title to the water and land start in 1492 when Columbus raised the flag of Spain and claimed this land for the Queen of Spain. In 1763 Spain came into possession of the Louisiana Territory by virtue of a compact with France and in 1795 a temporary arrangement with the United States gave us a limited use of the Mississippi as a highway. France was dismayed at this agreement so on October 1, 1800, France again took possession of Louisiana Territory and when our envoy went to France to adjust our difficulties with them, France would not receive them unless a large sum of money was paid. The envoy said "millions for defense but not one cent for tribute."

In 1802 Spain closed the Mississippi to all U.S. commerce, so a deal was made in 1803 with France and for $15 million the United States came into 664,150,000 acres of land at 2½ cents an acre and included Arkansas, Iowa, Nebraska, North and South Dakota, Minnesota, parts of Colorado, Kansas, Montana, Wyoming, and Louisiana.

In a period of three weeks Louisiana Territory lived under the flag of Spain, the flag of France, and the flag of the United States and we hope our flag shall never come down.

Now this is the basis of the Supreme Court decisions of why the Federal Government owns the water of the Western States, by right of purchase, by right of exploration and settlement. Now we agree up to this point. Now we come to Wyoming and find that part of Wyoming came from the Louisiana Purchase of 1803, part of Wyoming came with the Mexican Cession of 1848. Another part came in the Texas Annexation in 1845 and another part from the Territory of Oregon, 1792 to 1846.

The Mexican Cession brought us part of Sweetwater County, southwestern part of Carbon, and south part of Uinta County. The Texas Annexation brought most of Carbon and southwestern Albany County. The Oregon Treaty brought us the northwestern part of Fremont County, the northern part of Uinta County, and part of Yellowstone Park.

The Louisiana Purchase brought all of Crook, Weston, Converse, Laramie, Sheridan, Johnson, Natrona, Big Horn, Albany counties, part fo Carbon, Fremont, Sweetwater counties and part of Yellowstone Park. These were combined into the Territory of Wyoming.

In 1868 and for 21 years Wyoming was a Territory whose Governor and other officials were political appointees and usually came to Wyoming for a 4-year term, and the blunders an eastern Governor and officials can cause in a Western State are legion.

For 21 years Wyoming put up with taxation without representation and to an American there is no dirtier words than taxation without representation, and those are the three words that have always made an American fight and I hope they always will. So in 1889 Wyoming drew up the necessary papers and bills

for admittance into the Union on equal footing with the Original Thirteen States. The bill was sent to the House of Representatives, the bill passed the House and was sent to the Senate where an amendment was made in reference to Yellowstone Park, it went back to the House, the House concurred, the bill was passed with the signature of the President of the United States, and on July 10, 1890, Wyoming became the 44th State of the Union.

Now we feel that these words of admittance supersede the various purchases made and put us on an equal footing with the water laws of the first 13 States. The first States were independent nations bound together by Federal Government for the defense of all concerned, but each Nation or State would make and live by their own laws, and the water laws were one of these laws. Wyoming came into the States on an equal footing with these 13 States. Wyoming made its own water laws and we live by these laws.

In the Constitution of the first 13 States these words appear, "That these United Colonies are and of right ought to be free and independent States. And that as free and independent States they have full power to declare war, conclude peace, contract alliances, establish commerce and do all other acts and things which independent States of right may do."

We maintain that under this Constitution that Wyoming owns the waters of the State.

Wyoming was the first State to provide by constitution enactment that the waters within the borders of a State are the property of the State.

In the U.S. Government Desert Land Act, the title to the land comes from the Government. The title to the water comes from the State. The patent to the land comes from the U.S. Government. The patent to the water comes from the State of Wyoming.

Under article VIII, section 1, constitution of Wyoming, the water of all natural streams, springs, lakes or other collection of stillwater within the boundaries of the State are hereby declared the property of the State.

That concludes our summary of the waters and how we feel about them and in closing we wish to say: The ones we love and all we have are tied to the lands and waters of Wyoming. We sincerely hope that Wyoming, under God and our flag, by its solemn virtue as a sovereign State, may claim and hold forever the waters of Wyoming.

ELK MOUNTAIN, WYO., *September 19, 1959.*

Senator ROBERT KERR,
Senator JOSEPH O'MAHONEY,
Senator GALE MCGEE,
Representative KEITH THOMSON,
WYOMING FARM BUREAU FEDERATION.

Following is the statement adopted by the Carbon County Farm Bureau at its annual meeting September 18, to be presented at the congressional hearing in Laramie on October 8, 1959:

"Water being the most important natural resource in the State of Wyoming recognized as being the property of the State of Wyoming in the constitutional provision, article VIII, section 1, we view with alarm any change by legislative action or edict. We feel that any change would be to jeopardize the rights of cities or of agriculture to its use. We feel the recent Supreme Court discussions involving the *Twin Cities Power* case, the *Appalachian* case, and the *Hawthorne Naval Depot* case and others point up to the trend toward the Federal supremacy doctrine. We do feel these rights are well established and adjudicated under State law and should not be jeopardized.

"NELSON WREN, *President*,
"ELINOR M. GARRETSON, *Secretary*,
"*Carbon County Farm Bureau.*"

Mr. ANDERSON. Do you have a few minutes for Sweetwater County?

Senator MCGEE. Yes. Will the Sweetwater County spokesman, Mr. Cranney, come forward?

While you are taking your seat, Mr. Cranney, may I report we received a telegram from George A. Chilton, Sweetwater County Farm Bureau, president, explaining his regrets at being unable to attend here this morning.

STATEMENT OF CIRIL D. CRANNEY, IRRIGATION CHAIRMAN OF THE SOUTHWEST DISTRICT, WYOMING FARM BUREAU FEDERATION FOR SWEETWATER COUNTY FARM BUREAU

Mr. CRANNEY. Mr. Chairman, Senator Kerr, Senator McGee, Senator Kuchel, I am representing Sweetwater County Farm Bureau.

We are concerned primarily with the developments there by the Bureau of Reclamation. I happen to be a farmer on the Eden project so the information I give you is firsthand.

I believe the core of our problem would be best stated if I read this statement which will take only a couple of minutes, which was prepared by the Sweetwater County Farm Bureau committee.

Because of a severe water shortage the past season which has caused very substantial crop and financial loss to the farmers on the Eden project, the residents of Eden Valley have found it necessary to initiate steps to correct the situation with regard to the long range water supply.

When the rehabilitation and enlargement of the Eden project was contemplated, the findings of the Bureau of Reclamation showed the water supply furnished by the Big and Little Sandy Rivers to be sufficient to irrigate 20,000 acres. The reconstruction of the irrigation system by the Bureau of Reclamation and the land development program carried on by the Soil Conservation Service was based on this figure which included approximately 9,000 acres then being irrigated and 11,000 acres of new land.

By the spring of 1958 it appeared evident that the water supply was insufficient to irrigate the 20,000 acres. The Bureau of Reclamation and the Soil Conservation Service mutually agreed to reduce the irrigated acreage to 17,500. This reduction was approved by the board of commissioners of the Eden Valley Irrigation and Drainage District.

Not all of this land has yet been put under irrigation. During the past 1959 season, less than 15,000 acres were irrigated. Although this is over 2,500 acres less than the total to be put under irrigation within the next year or two, a severe water shortage developed. All farms on the project suffered from the shortage but those of the older farms requiring the most water and the newly developed farm units were most severely affected.

Here is a point I wish to emphasize which was just brought out by Mr. Anderson, president of the State farm bureau, that is; the conditions under which we operate in these areas.

Altitude, soil, and climatic conditions on the project combine to make this area marginal for farming operations at best. It is very doubtful if farmers settling on the new farm units will be able to succeed in producing enough to provide a livelihood and payments on their land if water shortages cause a crop shortage more often than once each 8 or 10 years. The opinion of the committee, supported by the great majority of the farmers on the project is; that the present water supply lacks about 30 percent of being sufficient for irrigation of the 17,500 acres over a long period of time.

With these conditions existing it is evident that the development of successful family farms, furnishing a satisfactory living for some

of our citizens, and producing additional food for our population—which we assume to be the objective of the Government in sponsoring this development—is automatically defeated.

Here I think is the crux of the problem; the difference in the point of view between the Bureau of Reclamation and between the farmers or settlers who actually use this water. The Bureau of Reclamation, and rightly so, is concerned primarily with the conservation of water. We all agree that that is proper and should be strictly observed. However, those of us who are actually on the farms utilizing that water have to live. We have to make a living. The economic welfare of the farmers utilizing that water, we feel, is equally important with the conservation of water.

Senator KUCHEL. May I ask you a question there?

What are you talking about? Are you talking about the cost of the water that the Federal Government puts on it or the application of the acreage provision?

The CHAIRMAN. He is talking about the adequacy of the water for the land they are permitted to use as I understand. Aren't you?

Mr. CRANNEY. That is right.

Senator KUCHEL. Is additional water available in this particular project?

Mr. CRANNEY. Not in our watershed.

The CHAIRMAN. He thinks the answer is to provide a program for more limited amount of acreage. Isn't that your position?

Mr. CRANNEY. At the present time that seems to be the only solution.

The CHAIRMAN. In other words, they started out with a project, as I understand, from 20,000 acres and then decided there was only adequate water for 17,500, so they reduced the eligible acreage to 17,500. He is now telling us, as is the group of people from the district with the petition here, that there is not enough water for 17,500 acres, and that a solution must be found and if I understand his position is that the eligible acres should be still further reduced.

Mr. CRANNEY. That is our contention; yes, sir.

Senator KUCHEL. Let me understand. Under Federal reclamation law, your conservation district entered into a contract with the Bureau, I take it, for supplemental water.

Mr. CRANNEY. That is right.

Senator KUCHEL. If that contract is not in the public interest, so far as the owners of the real property are concerned, who lie within the boundaries of your conservation district, then it seems to me the only way to rectify the inequities is by negotiating a new contract. You may be right. You apparently have renegotiated it once and by agreement have cut the acreage down from what originally was contemplated.

Mr. CRANNEY. Yes, sir.

Senator KUCHEL. Could not that be done again?

Mr. CRANNEY. I think it would be possible; yes, sir.

Senator MCGEE. Have you approached the Bureau for renegotiation to reduce it further?

Mr. CRANNEY. We have discussed the matter quite thoroughly with Mr. Mennenhall who is in charge of our area there at the Rock Springs office.

The CHAIRMAN. What does his attitude appear to be?

Mr. CRANNEY. Well, to speak frankly, he is more or less indifferent.

Senator MCGEE. Indifferent?

Mr. CRANNEY. He feels that perhaps the lack of getting the proper results from the available water is as much the farmers' fault as anyone's.

Senator KUCHEL. Of course it is a difficult problem. Suppose everyone in this room belonged to that conservation district and I had my property and some people over here thought that the district should be restricted to cut me out. I don't think I would like that.

Mr. CRANNEY. May I explain a little further?

As all of you no doubt know, the runoff of these rivers varies tremendously from season to season. The Bureau of Reclamation has made provision to utilize this water even during the years of high runoff, the large water supply. For the few years of shortage—more years of shortage we contend the farmers cannot stand—it is our contention there should be a margin of safety there. During the years of the highest runoff it no doubt would mean some water would be spilled, some water would go down the river unutilized by the project, but it would cut the acreage down to where the average use would be adequate to give us a living.

The CHAIRMAN. Do you have a reservoir there?

Mr. CRANNEY. Yes, sir.

The CHAIRMAN. Is it capable of storing a reserve of water in the year of the high rainfall to meet the requirements in the succeeding year when it would be below average?

Mr. CRANNEY. Yes, sir. It will store some reserve, but that lasts only 1 year.

The CHAIRMAN. On account of evaporation?

Mr. CRANNEY. Well, unless we would have 2 succeeding years of exceedingly high runoff that reserve would be used the following year.

Quite often we have seasons of low runoff, short water supply, and 4 or 5 succeeding years. That is where one of our biggest problems comes. The farmers in the area just cannot take that shortage for so long a period of time and still continue to operate.

Senator MCGEE. Are there any other questions?

The CHAIRMAN. Certainly the problem is one that is quite real. As this witness has said, it is a little difficult for the members of the group getting this water for irrigation on their lands to look at the problem of others and from the standpoint of how it affects the individual economy of the family or the economy of the individual family.

Mr. CRANNEY. That is right.

The CHAIRMAN. And certainly reclamation projects are concerned about conserving water. But the controlling theory has to be that that is done on a basis that is reflected in terms of economic welfare of individual water users. In the final analysis that has to be the test.

Mr. CRANNEY. I would like to state further that the State board of natural resources has recognized our problem and has taken one of these new farm units on the project to establish a demonstration unit which will begin operations next spring. We hope by that means to obtain further information and further help on our problem. We

certainly would appreciate anything that your honorable committee can do for us.

The CHAIRMAN. We are very interested.

Mr. CRANNEY. Thank you very much, Senators.

Senator MCGEE. Thank you, Mr. Cranney. We will make a part of the record at this time the petition from the Sweetwater County Farm Bureau signed by a great many individuals in relation to this problem peculiar to the area.

(The document referred to follows:)

STATEMENT OF SWEETWATER COUNTY FARM BUREAU

GENTLEMEN: During its annual meeting held September 22, 1959, the Sweetwater County Farm Bureau instructed a special committee to formulate and present to your honorable committee a statement setting forth the conditions now existing in the Eden project of Wyoming. Pursuant to this decision the farm bureau committee submits the following statement:

"Because of a severe water shortage the past season which has caused very substantial crop and financial loss to the farmers on the Eden project, the residents of Eden Valley found it necessary to initiate steps to correct the situation with regard to the long range water supply."

When the rehabilitation and enlargement of the Eden project was contemplated, the findings of the Bureau of Reclamation showed the water supply furnished by the Big and Little Sandy Rivers to be sufficient to irrigate 20,000 acres. The reconstruction of the irrigation system by the Bureau of Reclamation and the land development program carried on by the Soil Conservation Service was based on this figure which included approximately 9,000 acres then being irrigated and 11,000 acres of new land.

By the spring of 1958 it appeared evident that the water supply was insufficient to irrigate the 20,000 acres. The Bureau of Reclamation and the Soil Conservation Service mutually agreed to reduce the irrigated acreage to 17,500. This reduction was approved by the Board of Commissioners of the Eden Valley Irrigation and Drainage District.

Not all of this land has yet been put under irrigation. During the past 1959 season, less than 15,000 acres were irrigated. Although this is over 2,500 acres less than the total to be put under irrigation within the next year or two, a severe water shortage developed. All farms on the project suffered from the shortage but those of the older farms requiring the most water and the newly developed farm units were most severely affected.

Altitude, soil and climatic conditions on the project combine to make this area marginal for farming operations at best. It is very doubtful if farmers settling on the new farm units will be able to succeed in producing enough to provide a livelihood and payments on their land if water shortages cause a crop shortage more often than once each 8 or 10 years. The opinion of the committee, supported by the great majority of the farmers on the project is, that the present water supply lacks about 30 percent of being sufficient for irrigation of the 17,500 acres over a long period of time.

With these conditions existing it is evident that the development of successful family farms, furnishing a satisfactory living for some of our citizens, and producng additional food for our population—which we assume to be the objective of the Government in sponsoring this development—is automatically defeated.

In our opinion, this observation could profitably be kept in mind when plans for the Seedskadee or similar irrigation projects are being formulated.

Attached herewith is a statement signed by over 90 percent of the present farmers on the project.

Respectfully submitted.

JAMES MCMURRY,
Chairman, Sweetwater County Farm Bureau Committee.

EDEN VALLEY, WYO., *September 17, 1959.*

We, the undersigned farmers and ranchers of Eden Valley, find that the water requirements for irrigation in this valley have been grossly underestimated by the Bureau of Reclamation and the Soil Conservation Service. It is therefore impossible to farm on an economical basis until the condition can be corrected. Although most farms receive this year approximately 90 percent of the Bureau of Reclamation's long-range prediction, we had little more than half of the water necessary.

Thomas J. Barger, Eugene Hodder, James Mines, George Shilton, John A. Coppes, Jack V. McMurry, August Hennecke, Ralph M. Stout, H. C. Brown, Joe Aguine, Joe Burton, Paul M. Olson, Fred Meyer, Vivian Swanstrom, O. E. Wright, Paul Payne, L. W. Grandy, Alva O. Brantby, Leonard J. Ingle, Magness Bauer, Mike Sporiz, Pat Murphy, Floyd Henry Eden, George D. Chilton, Vern Van Matre, Ray M. Dack, Claude R. Watterson, Mrs. John Jamieson, A. Dee Benson, Shirley Benson, Richard Y. Nelson, G. E. Nelson, Josephine C. Dearth, Emmett Griffin, Mrs. John Andrews, Paul H. Harrison, June Harrison, John J. Robinson, Nick Tomisich, Fred Badoswich, Dillwyn Ramsay, John J. Skorcz, Frank C. Mayo, Edwin J. Tomick, Mrs. Joe Tomick, Vernon J. Bluemel, Abel Vigil, John Cady, George Brown, Lois A. Brown, Ada Conley, John A. Wood, Joe M. Segura, Thelma Stout, Zeb Stout, Glenn S. Smith, Vern V. McMurry, James E. McMurry, Ruth Pellatz, Lincoln Pellatz, Leron Hunsaker, Veko Matilainess, Paul E. McCracken, Mrs. C. L. Anderson, Charles Anderson, Thomas Delmastro, Mrs. Douglas P. Rolmer, Harold C. Anderson, R. R. Bell, C. A. Jensen.

Senator MCGEE. Now, the next witness is Mrs. George E. Hollister, president of the League of Women Voters of Wyoming. I think I noted here a lobbying convergence on us, Mr. Chairman, by the very fine ladies of the league. Their delegation is here from Cheyenne, from Casper, from Boulder, Colo., as well as the hard working members of the Laramie chapter.

I think I should report—and my colleagues must have had the same experience as I—that in Washington we have had very enlightening meetings with your national president, Mrs. Phillips, and Mrs. Douglas from the national office. They, too, have contributed materially to other sides of this whole water picture.

It is through the league, in my judgment, and among these other groups that we are going to generate a popular and public awareness that will provide the opinion really necessary to back up the correct legislation. I, for one, want to applaud the league on its endeavor in this regard.

STATEMENT OF MRS. GEORGE E. HOLLISTER, PRESIDENT, LEAGUE OF WOMEN VOTERS OF WYOMING

Mrs. HOLLISTER. Thank you very much, Senator McGee.

The league, I am sure, is very appreciative of your remarks, gentlemen, and particularly because we are newly organized in this part of the country. The league in Wyoming has only been organized for 2½ years and we are just getting our feet on the ground. We hope to be of a great deal more service to our Government and our people as the years go by.

I am Mrs. George Hollister, State president of the League of Women Voters of Wyoming. As you have heard, your committee has been familiar or has become acquainted with our work on the national level.

I appreciate this opportunity to appear at this Wyoming meeting and to express the opinions of the league on the matter of water conservation.

The study of water conservation was first placed on our national agenda in 1956. Currently, the wording reads:

> Support of those national water policies and practices which will promote coordinated administration, equitable financing, and an original river basin planning.

To inform ourselves the league has been studying much of the material prepared by the different organizations that have appeared before the committee this morning. We are cognizant of the timeliness and importance of the work of your committee.

Many of our fundamental economic problems result from failure to develop and fully use water resources. In spite of the point that has been made of our increased population, Wyoming is also faced with a problem of outmigration. This outmigration includes agricultural families as well as urban residents. Among the problems is the unfortunate fact that people leaving the State are in the 18- to 44-year age group.

Senator YOUNG. Would you mind an interruption at that point? We in North Dakota have felt for years, and I think it is correct, that we are educating our young people for other States.

Mrs. HOLLISTER. That is exactly what we say.

Senator YOUNG. Our young people go to other States after they graduate.

Mrs. HOLLISTER. We are exporting the skills and abilities of the very capable age group.

Senator MCGEE. May I say to Senator Young there we are grateful some have left North Dakota. We got good ones down here at the university from your State.

Senator YOUNG. Thank you. We have a couple from your State, too.

Mrs. HOLLISTER. Nevertheless, we would like to keep those young people here. And in order to do that we must make jobs available and this probably means industry and if we are going to have the industry that means water to take care of that industry.

However, our cities are faced with the problems of increased population which makes the municipal and domestic use of water an increasing problem.

Also, our recreational factors must be considered because these have economic as well as social implications within our State.

As has been pointed out, in Wyoming four great rivers begin and therefore it is important not only to us but to many people that we preserve our watershed and nurture its runoff. The solution to Wyoming water problems will have to be found as a part of an efficient and effective regional and national water program.

The general problem of water conservation has received consideration in governmental surveys. But too much of this material lies on the shelf or is buried in committee files. Unless action succeeds investigation and planning we will, within a few years, find that our situation has become critical. In some areas it has already reached that point.

We would like to know, first, as we study this material, and see agencies such as the Missouri River Basin Interagency Committee, is the administration of our agencies functioning efficiently?

Second, is financing of projects equitable and just with State and local governments and private users sharing proportionate cost according to benefit derived?

Third, is this type of organization most suitable for the basin?

After we have given these factors careful consideration we will work to inform the public to seek desirable legislation and to support those measures such as your Senate bill 2549, which will promote an effective and coordinated water conservation program.

We do not want compromise for the sake of compromise between agencies at the expense of economy and efficiency.

Neither do we want our river basin development used as a political football. We want a logical, farsighted approached to complete water basin and rivershed development. Recognizing the fact that there may be error in human judgment and that immediate problems or needs of the group may at certain times overshadow a broader plan, the league would hope these incidents may be kept at a minimum.

We wonder why the flood damage at Acove was not foreseen. We wonder what areas have been overdeveloped with little chance of obtaining sufficient water while others are neglected. We wonder why residents in certain areas find themselves quarreling over the use of the water available.

We ask these questions and then we ask what can be done. We do not want a water dictatorship. We want democratic controls. Yet we cannot——

Senator McGee. You mean small "d" democratic controls?

Mrs. Hollister. Yes. Yet we cannot afford to let our resources be wasted by either Democrats or Republicans.

In conclusion, I should like to quote a league precept. "Action without study is fatal. But study without action is futile."

May I congratulate the Senate on their appointment of this committee? We hope that specific action will follow.

Thank you.

Senator McGee. Thank you very much, Mrs. Hollister.

Are there any other questions from the committee?

Senator Kuchel. Mrs. Hollister, that is a very good statement. As you were summarizing some of the points that your league makes, I think back to the situation in which my own State finds itself. The southern part of my State could not live today unless water were imported through the Colorado River. The Colorado River compact was agreed upon in good faith many, many years ago. We have a lawsuit with our good neighbor Arizona, but actually there is nothing wrong with that. That is why we have courthouses, and when the decision is made final, whatever it is, I have no doubt at all that the people in both those States and their government will abide by it.

I think to underline that part of the point you make, we ought to preach a gospel of cooperating with our neighbors in the development of water resources to a maximum degree, because you in your city and those in your neighboring city will be, as time goes by, in relatively the same position that neighboring States are in the growing and expand-

ing need to use waters that flow through both and I am all for working these out as amicably as possible. I think we have made progress.

My late father used to tell me that in the early days of my State, and I am sure in the early days here, they used to settle these things with a pistol. So we have had a little progress.

Mrs. HOLLISTER. I am sure we are making progress in the league, because of our national organization. I believe that we do look at it from a national viewpoint as well as local and State viewpoints because of the way we are organized.

Senator KUCHEL. Yes, ma'am.

Mrs. HOLLISTER. Thank you.

Senator MCGEE. Thank you very much, Mrs. Hollister.

Senator MCGEE. I just was handed a note by Senator Young. He reports that a real old-fashioned blizzard is in progress right now in North Dakota. Visibility is zero.

I trust with the great respect with which you are held there, Senator, that you will make it clear to them that we did not foul up the visibility.

Senator YOUNG. We got out of there in time, though.

Senator MCGEE. He promised good weather up there and delivered, and we bragged about our great weather down here and through the tender mercies of the elements we delivered, too.

The next witness is Dr. Morris E. Garnsey. Dr. Garnsey is from the Economics Department of the University of Colorado and has long established himself as a noted specialist on this problem on a regional basis and it seems very appropriate that he share with us his brains at this point.

STATEMENT OF MORRIS E. GARNSEY, PROFESSOR OF ECONOMICS, UNIVERSITY OF COLORADO

Mr. GARNSEY. Thank you, Senator McGee.

Mr. Chairman, members of the select committee, since I have the honor of following the representative from the League of Women Voters I feel like I have to get in that act, too.

I would like to say that the reason the testimony you heard from them is so effective is not only because they are nonpartisan and objective and disinterested but as a teacher I also know that they do their homework and are ready when they come.

I, in my small way, would like to present a disinterested and objective statement with regard to this issue. I shall skip through my statement, the first five pages, and concentrate only on the second part of it where I discuss the relationship between western water resource development and the national interest. And I shall try to discuss this in terms of economics. I hope in nontechnical language.

Let me say that there are at least four important economic criteria which measure any investment and that a water investment should be measured up against these criteria as much as an investment in a nylon factory or an oil well, or a new railroad or any highway or any other kind of investment.

Of course any investment which meets these criteria is in the national interest no matter where it may be located, in the West, or on the Colorado or on the Delaware or wherever else.

The first criterion is that of productivity. Does the investment earn a return? The Congress knows that this is a criterion for investment and it uses the cost-benefit ratio to deal with this. No water project which has a cost-benefit ratio of less than 1 to 1 is likely to be considered.

More important, however, is the question of how profitable is this particular investment as related to other competing investments. So in a way we range all investments from the most productive investment to the least productive. We want to see that any investment actually undertaken does not shove out of the way an investment which is more productive than that particular investment. It is here that people who attack water resource development projects—particularly irrigation projects in the west—rest their case. They make a general assumption that water development project investments are low in productivity and that merely to do this will shove out of the way some other alternative investments of a higher productivity.

Now, of course, on a strict project-to-project basis you have to go on the facts of what is the return. And this ought to be sufficient. But beyond that there are a good many general arguments about the productivity of investments. I will cite only one and that is that in water investments the Federal Government has a particular responsibility to build ahead of the traffic, to build water projects in anticipation of their ultimate full development.

Senator KUCHEL. When you say "Federal Government," do you not also include, however, all levels of government?

Mr. GARNSEY. Thank you, Senator. Of course government in general should do this.

Now, from the point of view of strict economic return on the investment, this is reasonable because you avoid the waste of crash programs done at the last minute, you overbalance the low returns in the early years by extraordinarily high returns in the later years. It might very well be that a private enterprise could not survive the period of low investment in the short run but a public enterprise can survive this and it should plan on that basis.

There are many other arguments which I will not go into today but this one, it seems to me, is very important for this committee at this time. Build ahead of the traffic. You must do that. I could say that in the last decade we haven't been doing that, and the no-new-starts policy is unfortunately a thing which runs counter to this argument and which ought to be reconsidered.

This criterion is perhaps the primary criterion but there are three other very important criteria for investment and particularly for water resource development which ought to be considered.

The second criterion, then, is whether or not a project contributes to the economic growth of the total society. I think it would be hard to find a class of projects which contribute more to economic growth than water resource development projects. Here again each project has to be examined on its own merits but as a generalization this is one which will stand pretty well.

I would just like to quote a few sentences from the mayor of Green River because it seems to me he put his finger on this pretty well when he was talking about the Flaming Gorge Dam and reservoir in the Upper Colorado River storage project.

This is what he said: "This project will mean growth and prosperity for Green River. Harnessed water always brings this about. I don't know that I will live to see all the possibilities developed but the potential is plainly tremendous. For one thing, the power will enable us to go down to get the minerals we know are locked in the bowels of our earth. For another, it will turn southwest Wyoming into one of the great recreational areas."

I submit, gentlemen, that it would be pretty hard to show that there are many other projects which would not have this stimulating effect on growth. This is, of course, redoubled when the project happens to be in a relatively undeveloped area of relatively sparse population where new population will settle during the total growth of population.

The third criterion is that of whether or not the investment contributes to employment. There are two things here. The first one is, that we do have three and a half million unemployed in this country and most of this is structural unemployment. It is located in depressed areas. The Congress has attempted to deal with this problem. There have been several bills introduced in Congress and some even passed dealing with distressed areas, but so far not enough has been done. So I suggest that whenever a water resource project is being considered by the Congress, the Congress should inquire as to the employment effects of that project in the region where the project is located.

But even more important, gentlemen, is the matter of quality or kind of employment. The history of employment in this country has been one of rising productivity, shift out of agriculture, a shift from blue collar occupations to white collar occupations in industry and trade. And if you will study the employment generated by a water resource development project I think you will find almost inevitably that it replaces partial employment with full-time employment, that it upgrades the quality of employment, that it opens new job opportunity at higher productivity in utilities, industry, agriculture, mining, recreation and trade.

Finally, the fourth criterion is the effect of an investment, in this case an investment in water resources, on the distribution of income in the society. This is a very delicate subject. It touches an economic and political sensitive nerve. It is, of course, the source of much of the controversy over water resource development projects because there is no doubt that income is redistributed as a result of expenditures of this kind. The opponents say, "Well, the taxpayers are just subsidizing favored people." The proponents say, "Spend a dollar to develop our pet project and this will bring unlimited benefits to the economy as a whole." Neither of these positions is defensible. What is necessarily necessary to be done here is to have a good, sound analysis of the income redistribution effect of policy of project so when the Congress comes to vote on it, it will know what this is, too. Congress has already taken account of this in the policy toward which it is moving of requiring more participation by local beneficiaries of the projects and requiring them to carry more of the cost. This is a move in the right direction. It was recommended by President Truman's Water Policy Commission, it was recommended by President Eisenhower's Water Policy Commission.

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But unfortunately at the present time the Congress does not have a consistent policy. The local contribution requirement varies as between agencies, say the Corps of Engineers and the Bureau of Reclamation. It varies as between kinds of projects. I would like to recommend to the committee that the committee try to consider finding a way to apply standard conditions of repayment by local and state groups on Federal projects.

Gentlemen of the committee, by way of summary I repeat that there are four criteria for economic investment and that water resource projects can measure very high in terms of each of these four criteria. The first is the criterion of productivity. This criterion is quite well taken care of by the Congress through cost benefit analysis and so I recommend continued use and continued improvement of the scientific accuracy of cost benefit analysis.

The second criterion is that of economic growth.

The third is that of the effect of the project on employment.

And the fourth is the effect of the project or the program on the distribution of income.

And may I recommend to the committee that in future national legislation and future public works bills effort be made to require more and more measurement of these criteria and their application to each project so that a better judgment can be made by the Congress.

I am confident that with more information of this kind for a better basis for decision and selection on the part of the Congress a greater public support for these projects can be generated.

Thank you.

Senator McGEE. Thank you, Dr. Garnsey.

Any questions from the committee?

The CHAIRMAN. No questions, but I would like to say it is a very fine statement.

Senator KUCHEL. I would like to say that was very thoughful of you, Dr. Garnsey. Thank you very much, sir.

Mr. GARNSEY. Thank you.

(The prepared statement follows:)

TESTIMONY BY MORRIS E. GARNSEY, PROFESSOR OF ECONOMICS, UNIVERSITY OF COLORADO

My name is Morris E. Garnsey. I am professor of economics at the University of Colorado, but I speak as an individual and not as a representative of any institution or organization.

For the past 22 years that I have been teaching in the West, my field of specialization has been regional economics. Within this field I have concentrated on the development of the resources of the West, since ours is primarily an economy of resources rather than of manufacture or trade.

Of these resources, by far the most important to the West is water. In the words of the Advisory Committee on Natural Resources which reported recently to Governor McNichols of Colorado, "Water is not only a resource in itself but also a means by which all resources are made usable. Water is essential to the development of every natural and human resource. While it is true that the development of every resource has some effect on all the others, in the case of water this effect is immediate and determining." This is our situation in a nutshell. It is therefore appropriate that westerners should appear before a committee that is concerned with water resources.

A recent report on probable needs for capital investments in water in the United States by the year 1975 gives us some notion of the importance of water to the national economy. This report (by W. L. Picton of the U.S. Department of Commerce) indicates that within 15 years we shall have construction requirements for water development that will total over $200 billion.

Picton's report is extremely useful in showing the magnitude of investments that will be needed by the Nation as a whole. From it one must pass immediately to the geographic location of this vast investment in water resource development. From the point of view of natural water supply, the country is divided into humid, subhumid and semiarid areas. Each of these areas is in turn divided into river basins, and these basins may be thought of as development regions.

As a regional economist interested in the West, I should like to speak today primarily on two questions. First, what are the requirements of the West as a region for water resource developments? And second, what is the relation of western water resource development to the national interest?

I. WESTERN REQUIREMENTS FOR WATER RESOURCE DEVELOPMENT

The tremendous increase in water resource development investments foreseen by Picton and many others is, of course, due largely to population growth. We are, it is true, using more water per person nowadays, but the important factor in water needs is the increase in the number of persons.

I need hardly say here that the population of the West (by which I mean the Rocky Mountain and Pacific States) is growing faster than the rest of the Nation and will undoubtedly continue to do so. Six of the ten States with the highest proportional population increases in the first half of this decade are in the West: Arizona, California, Colorado, Nevada, New Mexico, and Utah. By 1975, according to the estimates of the Stanford Research Institute, the Western States together will have a population of nearly 40 million. This is twice as many people as they had in 1950, while the Nation as a whole will have grown by about one-half.

Municipal water requirements

The very rapid growth of the Western States is important to national water resources policy because this growth is taking place in a region which is already short of water. Only a small part of the West can be classified as humid; most of it is semiarid. Thus, increasingly, the people will be where the natural supply of water is not.

This difficulty is compounded by the fact that many of the major concentrations of western population—the metropolitan areas—are in the dryer parts of the States. The Los Angeles area is of course a prime example. In Colorado, almost half the population is concentrated in the Denver metropolitan area on the dry eastern slope of the Rockies. Denver has just voted another $40 million in bonds to complete transmountain diversions of water, and this is only a drop in the bucket in comparison to Los Angeles investments. In view of the present financial straits of most cities, it seems unavoidable that national water policy must concern itself with western municipal water supply. And it should not be forgotten that municipal water supply is just as crucial a problem in many smaller western cities; the scale is smaller, but the difficulty is similar.

Recreation as a major water use

We tend to think of the needs of burgeoning populations for water in terms of use in homes, places of business, and industry which buys treated water from cities. But a growing population will have another pressing need for water—as a source of recreation. One well-known economist—Marion Clawson—has recently taken cognizance of the effects on the demand for outdoor recreation of a growing population, more leisure, higher incomes, and greater mobility. By the end of this century, he believes, this demand will be 10 times what it is today. An even heavier burden will be placed on resources such as forests and water.

If this seems farfetched, one has only to review the steeply rising use of water for recreation in the TVA region and the use figures on reservoirs built by the Army Engineers and the Reclamation Bureau. In the water-hungry Plains counties on the eastern slopes of the Rockies, weekend traffic clogs the access roads to reservoirs. Boat salesrooms are now commonplace on Main Streets of the Plains towns where rainfall may average only 10 to 15 inches a year, and I have no doubt that this situation is duplicated in the intermountain region.

This vigorous response to new opportunities for recreation created by water resource developments indicates that the need for water recreation is indeed a real one, important not only in terms of individual satisfaction but also in

dollars and cents. By and large, the value of water for recreation cannot be quantified, at least not in economic terms. But I believe that future planning for water resource developments should include recreation among the major benefits, even if this benefit cannot be reduced wholly to dollar figures included in the calculation of the benefit-cost ratio.

Water for new industry

A significant factor in the recent growth of western regional economy is the development of industry, and water for plants continues to be a major concern for industrial management. Perhaps even more important from the point of view of national water policy is the need to assure water for industries which are just on the point of developing. I shall mention here only two examples: shale oil and related industries; and paper manufacture.

For a long time we have known that the shale oil potential of the United States is probably greater than that of all the rest of the world put together. U.S. reserves, principally in the intermountain West, are now estimated at 1.5 trillion barrels. Engineers believe that nearly 6 million barrels a day could be produced from available reserves in Colorado alone.

These reserves will be tapped as domestic petroleum falls farther behind U.S. needs for oil and as European demand requires more and more of the oil we now import. A recent engineering study [1] for the State of Colorado indicates that shale oil production will begin in the early 1960's and will increase steadily, reaching about 1,250,000 barrels a day by the year 1975.

By that time, it is anticipated, shale oil production and associated chemical industries will bring to a 100-mile stretch along the Colorado River a population of nearly half a million, where there are now more cows than people. To meet the needs of industry and the new urban development, about 250,000 acre-feet of water per year will be needed. Water in this amount is not available now on a year-round basis. It will have to be collected during the spring runoff and stored for later use. Dams and reservoirs must be constructed to make this possible.

Northwestern Colorado is also likely to be the site of large pulp mills in the near future. The U.S. Forest Service announced 2 weeks ago that four companies are interested in building mills. The Forest Service states that enough suitable timber is available in three national forests in the area to keep newsprint plants producing 1,000 tons a day for 50 or 60 years. Such an industry would represent investments of millions of dollars and furnish employment to several thousand workers. Here again, availability of water is one of the prime considerations.

Colorado is interested not only in such an addition to its economy but also in the effect of good cutting practices in improving the condition of the forests and thus increasing water production. For these forests contribute heavily to major tributaries of the upper Colorado River. But first we shall have to plan to make water available for the industries which will cut timber in a way that will make for healthier forests.

Another area in which future requirements will be high is electric power. A note on future power requirements of the Rocky Mountain Power Pool is attached. From these we can see easily that the hydro potential of the upper Colorado River storage project can be absorbed easily and still leave room for the development of the remaining hydro sites in the region.

Irrigation and western economic development

In regard to irrigation, which is widely believed to be the one way in which the West wants to use water, I should like to omit specific reference to the requirements for regional development. Many men who are experts in agricultural economics will doubtless give the committee the benefit of their expert knowledge.

Instead, I should like to speak briefly of the way in which the use of water for irrigation contributes to the changing character of western regional economy. For water that was originally made available for use on the land can be shifted to use for industry and cities, and year by year it is being so shifted. Take, for example, water use in the South Platte Valley, one of the richest irrigated areas of the Missouri Basin. In 1939, when the Northern Colorado Water Conservancy District was organized to handle sales of water from the Colorado-Big Thompson project and help repay costs allocated to irrigtaion, four municipali-

[1] Cameron and Jones, Inc., "Water Requirements for Oil Shale," A Study for the Colorado Water Conservation Board, Denver, July 1959.

ties contracted for water. In 1951, another city was added. By 1958, these cities were buying over 10 percent of the water from a project that was conceived largely in terms of irrigation. Industry also contracts for water, and it also has increased its proportionate use. Each year, water is being reallocated from agriculture to municipal and industrial use.

Two facts about water resource developments for irrigation are not widely understood outside the West. One is that, in order to secure water under the typical Western State water law, you must put it to use within a reasonable period. You cannot file on water with the understanding that you intend to use it at some time in the indefinite future. So the typical process by which water is secured by industry is to buy rights from people who have previously put the water to use. By and large, this means buying agricultural rights.

The other fact that should be more widely understood is that the same structures which are built to collect and store water and distribute it for irrigation can be used to supply water to industry or to cities when the need arises. The reclamation projects have a flexibility with which they are seldom credited. Not only can the use of component structures be shifted, but the shift in use will result in more rapid repayment of the Federal investment. Thus, projects which are constructed today primarily for irrigation may seem unjustified to some of our eastern cities; but this is the only way to take the steps presently required as preliminary preparation for future industrial and domestic uses. Let us not forget that water resources development is a dynamic process adapted to the dynamic character of the American economy.

II. WESTERN WATER DEVELOPMENTS AND THE NATIONAL INTEREST

With this brief look at some of the water requirements of a rapidly developing West, let us see how investments of Federal funds to provide the required water would contribute to the national interest.

As the members of the select committee well know, proposals for Federal deveolpment of the water resources of the West have been under attack during the last few years. Stimulated by the prevailing "climate of opinion" these attacks have come from such sources as the U.S. Chamber of Commerce, writers like Raymond Moley, and even from various Members of the Congress.

The arguments they have used are generally specious and unsound, and by and large have been recognized as such by most of the permanent administrators of the Federal Government and by the majority of the Congress. Nevertheless, such arguments have made some impression on the general public and actually have influenced some of my fellow economists. It appears to me, therefore, that a clear statement of the relationship between the regional development of resources and the national interest would be useful. I do not propose to dignify the arguments of the Moleys and their ilk by repeating them here—to do so would merely bore the members of the committee. Instead I propose to state as clearly, and as simply as I can, the economic criteria for investment, particularly as these criteria are applied to investment in the development of water resources in the United States.

Productivity the basic criterion

The first and basic criterion for investment is the criterion of productivity. Will a particular investment repay its costs and yield a net return over and above costs? This is the first test. If a proposed investment can be reasonably expected to produce a net return during its lifetime then it is a good investment. It will contribute to the flow of national wealth. Hence such an investment definitely is in the national interest no matter where it is located. This basic principle is, of course, recognized by the Congress, and for many decades investments in water projects have been required to meet this test by the practical provision that the benefit-cost ratio for the project must be greater than 1 to 1.

There is, however, one important corollary to the productivity criterion. Productivity is a relative concept; and in general the investment with a higher return is more desirable than one with a lower return. If we had the knowledge and statistics to do it, and if uncertainty did not exist, economists and businessmen and Congressmen would draw up a list of every potential investment and rank each one in order of its yield. Thus the most productive investment—one yielding the highest return—would be ranked number one, and so on down the line to the investment with the prospect of zero return. All of the Nation's investment, public and private, would be included in this ranking. In it would be such items as exploration and drilling for oil, new farm machinery, new textile

mills and nylon factories, new highways, new houses, new schools, etc. It would include also new investment in water resources—such as the $66 million budgeted for Flaming Gorge Dam on the Green River here in Utah and Wyoming. Then, if this particular water project ranked high enough on the scale, it would be undertaken. Consequently, the real test for putting an investment into the Nation's annual investment schedule is whether a particular project displaces some other proposed investment—public or private—which would yield a higher return than the project in question. Obviously such a project does not belong in the schedule. Only the highest ranking projects are worthy of being chosen for execution.

Now the source of the general attack on irrigation in the West is the assumption that irrigation yields a low return on investment and therefore to spend money on it will automatically shut off expenditure elsewhere in the economy on an investment which is bound to be more productive than the investment in irrigation facilities.

Let me say at once that this is merely an assumption. It has not been proved, but only advanced, and then only on very shaky grounds. For example, it has been argued that there is a general presupposition that any private investment is certain to be more productive than a public investment because the private sector is more efficient in calculating profit and loss and in directing investment than is the public sector. The source of this view is the abstract economic model of a purely competitive society directed by highly efficient managers and investors who base every decision on a cold calculation of profit and loss.

Reality is far different from that simple model. To give only one example, in the United States today around 80 percent of private investment is derived from the reinvestment of retained earnings and depreciation reserves—about $24 billion out of $30 billion invested. The competitive capital market is not given a chance to evaluate critically billions of dollars of the investment made each year in our society. Consequently, such factors as elements of monopoly and special tax advantages give particular firms or industries a strong advantage in securing capital and investment often is misdirected when measured against the ideal allocation of the economist's model. But it is this reality with which we must deal—not the abstraction of the theorist, or the assumptions of the opponent of public investment.

Moreover, if we look on the positive side of this proposition, there is much evidence that public investment often yields great returns in the long run in areas where private investment cannot enter. In recent times Government has become the great innovator. Hard-headed atomic scientists and space scientists look with amazement at anyone who proposes that private investment could do it better—or could have done it at all. In the field of water resource development, the great contribution of public investment to national productivity and national output is also that of an innovator. The Federal Government can and must plan water resource projects long in advance of need. It must build ahead of the traffic and anticipate the requirements of the future. To do this is actually more economical over the lifetime of the project, for low returns in the early years of use are more than offset by much higher returns in the later years, while at the same time expensive building of crash projects on a partial basis is avoided.

Unfortunately, the Federal Government is not now realizing the full potential of investment returns resulting from this type of building ahead of current demand. Advance planning for future projects has not been really keeping up with population growth for nearly two decades, while the more recent policy of no new starts is false economy of truly tragic proportions.

Public investment also has a further advantage which comes from producing nonvendible goods from multiple-purpose water development projects. These values are real, even if not marketable, and they do contribute to the wealth and productivity of the society. Economists refer to benefits such as the intangibles just mentioned as external economies. Government is often in a position to realize such economies or efficiencies in production because of its ability to finance the output of nonvendible commodities, and because of its ability to sacrifice short-run returns for longrun benefits.

I conclude, therefore, that the general hypothesis that private investment is likely to be more productive that public investment is utter nonsense. Indeed, in the water resource field the evidence is mainly on the other side. Investments in water resource projects which are properly planned by engineers and economists, which are properly designed to the optimum scale, and which are properly timed, produce new wealth for the Nation and yield a return on the investment

competitive with all other types of investment—public or private. Such projects—whether located on the Colorado, the Arkansas-White-Red, or the Delaware—truly contribute to the national welfare, and their construction by the Federal Government definitely serves the national interest.

Stimulation of growth as a criterion

Productivity, however, is not the only criterion relevant to the assessment of the economic significance of water resource development projects. Productivity is a necessary criterion, and for private investment a sufficient one. But the economic impact of an investment expenditure does not stop with its contribution to the productiveness of the economy. It may also affect the growth potential of the economic system, and different types of investment affect this potential differently.

Investment in water resource development certainly must stand very high on any list of growth-stimulating investments. Since water is a basic necessity for domestic and industrial purposes, no community or region can grow without adequate supplies of water and adequate investment in facilities for using it. In semiarid regions the growth of agriculture also is dependent on water. Many economic studies have been made which demonstrate the high productivity of irrigated agriculture and the effect of increased irrigation on local and regional growth of population and industry. There are other growth effects also. Consider the Flaming Gorge Dam and Reservoir which I mentioned earlier. It will store some 4 million acre-feet of water in a lake 91 miles long that will extend to within 4 miles of Green River, Wyo., just to the west of us here in Laramie. Flaming Gorge will generate 430 million kilowatt-hours of electricity annually. Speaking of this project, Mayor Tom Rogers says, "It will means growth and prosperity for Green River and the rest of this area. Harnessed water always brings this about * * * . I don't know that I will live to see all of the possibilities developed but the potential is plainly tremendous. For one thing the power will enable us to go down and get the minerals we know are locked in the bowels of our earth. For another, it will turn southwest Wyoming into one of the great recreational areas."

It seems to me that Mayor Rogers has summed up this situation pretty well. It is true of course that Green River and the West in general will be the place in which much of the growth stimulated by the Flaming Gorge unit of the Upper Colorado River storage project will occur. But it is also true that this is national growth, too—growth which will benefit the entire Nation directly and indirectly. Moreover, this particular $66 million will be spent in a region of underdeveloped resources and low population density—precisely the kind of an area where judicious new investment will set off a whole chain reaction of continuing expansion, which will be felt far beyond the boundaries of the region.

The only way that the opponents of Federal water development programs could counter this argument would be to show that the $66 million budgeted for this project could be spent more productively somewhere else in the economy for some other purpose. This, gentlemen, I submit, is going to be mightly hard to do.

Addition to job opportunities

Now let us look briefly at a third economic criterion for investment, namely the relation between investment in water resources and employment. Unfortunately the treatment of this problem by economists has been very inadequate. Usually those who have written on this subject have made use of theoretical models which assume that full employment already exists, so that the employment produced by an investment in a water project is regarded as merely a transfer of employment.

This position is inadequate for two reasons. First, it disregards the factor of location emphasized by regional economists. For several years now it has been apparent that the hard core of 3 to 3½ million unemployed during the recent prosperity have been concentrated in a small number of identifiable geographic areas. Several attempts have been made by Members of the Congress to deal with this problem by the passage of special distressed-areas legislation, but so far these attempts have failed, sometimes by nonpassage of the bill, sometimes by veto.

Water resource development projects can help to solve the problem of localized unemployment either through direct employment in the distressed area or through the demand for off-site materials and supplies generated by the project.

Every water project proposed to the Congress should be supported by a thorough economic analysis of its employment effects in order to give this factor due weight in the selection of projects to be included in the budget and appropriations for any particular year.

There is, however, a more important relationship between water projects and employment. This is the quality or productiveness of the kinds of employment generated by water resource development. The history of the American economy has been one of rapid and continuous improvement in the productivity of labor. Throughout our history we have witnessed a continuing shift of the labor force out of agriculture, with a corresponding rise in the productivity of the farmer or farmworker. Today, in manufacturing and even in trade, a remarkable shift from blue-collar to white-collar employment also is taking place.

Water development projects contribute greatly to this trend: They reduce partial employment, replacing it with full-time jobs; they upgrade the quality of employment by providing productive jobs in engineering, construction, and administration; they open new job opportunities with higher productivity in utilities, industry, agriculture, mining, recreation, and trade.

In a few cases these beneficial results may be only transfers from equally productive jobs in other investments precluded by the water investment. In many cases, however, a net increase in job productivity is involved. The better job provided by the water project benefits not only the individual worker whose income is improved, but also the community, the region, and the nation.

Here again the national interest is enhanced and improved.

Income redistribution

I turn now to the fourth way in which water resource development projects affect the national interest. This is in the impact of the project on the distribution, or division, of the costs and benefits of the project among various individuals and sections of the country. This is a very complex and difficult subject to analyze. Income flows in our society are intricate and hard to trace. Each individual, each group, each section of the country tries to improve its own income position, even at the expense of others, and in so doing it touches a sensitive economic and political nerve, which we would usually prefer to let alone. Yet the issue is always there. Opponents of Federal water development assert that the general taxpayer foots the bill for Federal irrigation projects while local groups reap all the benefits in the form of unwarranted subsidies. Proponents argue expansively that every dollar spent for their pet project benefits the entire Nation in all sorts of undefined ways.

Neither is convincing, and I doubt if either argument has much influence on the decisions of Congress in its attempts to work out a sound national water development program. For one thing the Congress has moved more and more to a policy of requiring the direct beneficiaries of a particular project to bear a fair share of the cost of the project—a share proportional to the benefit received. This is in harmony with the recommendations of the President's Water Policy Commission, which was created by President Truman, and also with those of President Eisenhower's Water Resources Committee.

Unfortunately, the Congress has not yet developed a consistent policy for this purpose. Different repayment requirements exist as between different agencies, such as the Corps of Engineers and the Bureau of Reclamation, and also as between types of benefits, such as flood control and hydroelectric power. Surely the national interest would be better served if these differences were removed in favor of a consistent policy equally fair to all.

On the other hand, improper concepts and inaccurate assignment of costs and benefits may work to hold back the realization of desirable projects. Thus the critics of water development policies have attached the concept of secondary benefits, as charging that it leads to double counting. The new business gained by a barber in the new city of Page, Ariz., they say, is not a net gain to the economy as it merely offsets a loss of business by barbers elsewhere. As a regional economist, I feel sure that such reasoning is false. Secondary benefits which accrue to a particular region should be counted as regional benefits, and then added in a scientific way to national benefits. Those economists who argue that direct regional benefits merely cancel out on a national basis, have erected their analysis upon static assumptions. Regional growth is not secured only at the expense of other parts of the Nation. Rather it is almost certain to benefit the entire economy. To proceed further in the same vein, if 100 million persons each deprives himself in the course of a year of a 10-cent bottle of pop, and

gives (transfers) the 10 cents to the March of Dimes and the resulting $10 million is invested in laboratories and man-hours of research which ultimately produce the Salk vaccine, a great deal has been gained for the economy and for the general welfare. What is involved here is a realization of the great productivity of a concentration of effort either in an activity or in a region which yields infinitely more than the same numerical amount of effort and resources diffused throughout the economy.

Fortunately the American genius has devoted the great bulk of its powers to building an economy which produces more and more goods year after year. We create a bigger pie, and don't waste all of our time quarreling over who gets a bigger piece of this year's pie. In this way we all should get a bigger piece next year.

III. RECOMMENDATIONS

Mr. Chairman, I conclude with a brief summary and a recommendation. I have attempted to show that the economic impact of Federal investment in water resource development projects affects the national economy in four important ways. Of these the effect of investment on productivity is basic and of primary importance. This effect is taken into account by the Congress in its use of cost-benefit analysis. However, the other effects which I discussed are only partially traced out and sometimes even ignored.

Consequently I would recommend to this select committee that in future legislation dealing with national water policy and in future public works bills provision be made for the economic analysis and evaluation of water resource development projects in terms of not one but four economic criteria:

1. The productivity of the project as reflected in an objective and scientifically valid cost-benefit analysis.
2. The effect of the project on the economic growth of the region and the Nation, and the relation of the project to other growth factors such as population increase.
3. The immediate and future effect of the project as a generator of employment—again both regional and national.
4. The effects of the project on the distribution of income as among geographic and functional sectors of the national economy.

Such analysis would provide the Congress and the people with a broader base for determining the volume of annual investment in water resources development, and give them a more precise method for choosing among competing water development projects. The result, I am confident, would be to demonstrate conclusively that the great majority of water resource development projects are economically sound wherever they may happen to be located, and this would serve to increase popular support for these necessary additions to the wealth and power of the American commonwealth.

APPENDIX NOTE

In 1956 when the upper Colorado storage project was under debate, the Federal Power Commission surveyed the potential power market of the region. In 1958 the Rocky Mountain power pool, which serves part of the region surveyed by FPC, made new estimates of future demand for power in its area. This survey indicated a strong probability that the demand forecast by FPC for 1980 in the area served by RMPP, would actually be reached by 1965. Supporting data will be furnished.

Senator McGee. The next witness is Mr. Ora E. Bever from the Shoshone River Water Users Association.

STATEMENT OF ORA E. BEVER, REPRESENTATIVE OF THE SHOSHONE RIVER WATER USERS ASSOCIATION

Mr. Bever. Honorable Chairman and distinguished Senators on the committee:

My name is Ora E. Bever and I appear here today representing the Shoshone River Water Users Association.

This appearance before you was rather quick to me. I was not familiar with what the meeting was all about, with all the ramifications that go with it.

I am happy to be with you. I would like to make a statement, but I will just glance through this statement to save you your valuable time.

The CHAIRMAN. We will make the statement a part of the record.

Mr. BEVER. I will present the statement as a part of the record, sir.

The CHAIRMAN. All right.

(The prepared statement referred to follows:)

TESTIMONY OF ORA E. BEVER, SHOSHONE RIVER WATER USERS ASSOCIATION

My name is Ora E. Bever and my address is 112 North Edmonds Street, Powell, Wyo. I appear here today representing the Shoshone River Water Users Association, an association of irrigation districts and irrigation companies that divert water from the Shoshone River. In total, this association includes approximately 140,000 acres of irrigable land divided among 2,068 farm and ranch families.

Our association is composed of projects constructed under the administration of the Bureau of Reclamation and private canal companies who have financed their construction by bonded indebtedness.

Although we cannot speak with authority as to the most logical, practical, and beneficial national program that should be pursued in developing our water resources, we feel we can speak with authority from a practical viewpoint of actually having invested our lives, our wealth, our families, our health, and our sincere desire to succeed, into making a home and developing northwestern Wyoming. Our investment in the land is far greater than the investment made by the Government.

As an association, we recognize that without irrigation water in this arid area, we are helpless. It is principally because of water that over 20,000 people live in the towns and on the farms in the Shoshone Drainage Basin. No one needs to point out to our group what the value of water is because we recognize water as our country's greatest natural resource.

We are interested in the orderly development of the water resources as it is associated with reclamation, industry and municipal development. We recognize that any future development of northwestern Wyoming is contingent upon an allocation of the now unused water for future development of our area. An entire study needs to be made of water rights and the beneficial use of water. A study that recognizes the practical aspects of water requirements and one that recognizes a priority of development.

As we understand, this Senate select committee is undertaking a task of analyzing and inventorying our water resources with the purpose of making certain recommendations to Congress for its development. Our association would submit that any plan conceived should be based on the precepts that the wisest possible plans must be directed toward securing the greatest possible benefits for our country. This will entail an orderly plan of development that not only lays plans for the future but respects the experience and rights of the past.

A "use it or lose it" philosophy is not only detrimental to our State, but to the Nation. Such an ill-conceived philosophy contributes toward expenditures of moneys merely to satisfy an urge to spend without reasonable approach to all the facets involved in a development program. Any program for the development of our western resources must take into account the appreciation and effect it will have on the people presently residing in the area. If water is not allowed to remain in areas where future development is possible, these areas and its people may become victims of an economic isolation.

Any new development must have the support of the local people. These local people should be the people of the "grass roots" who are acquainted with the problems of the area by actually having lived on the land. It does not appear logical to support a development program which is designed to ignore the use of the best land or the rights of the people now in the area. Where two developments in the same area are being considered, the benefit-cost ratio for each area should be given first consideration in its development.

As an association, we respectfully request that plans for use of the waters of our area have the support of the local people. Our association stands ready

to give whatever assistance we can and will give wholehearted support to a sound and logical resource development. Our interest is a vital interest because we will be the direct recipients of the effects of any program planned in our area. Therefore, we believe planning with the local people is a "must." Thank you for your kindness and consideration in allowing us to testify before this committee.

Mr. BEVER. I would just like to elaborate on a few of the segments of the statement.

The CHAIRMAN. All right. You may proceed.

Mr. BEVER. I would like to make this comment, first, as an introduction of myself. You would not probably concede the idea but I feel that I am a part of the Bureau of Reclamation in the success of reclamation in the Shoshone irrigation project and the Shoshone River up near the Yellowstone Park. Our water source, of course, is there, and we are right up at the source of the water.

The Bureau of Reclamation has had control and has operated that project. It was the first project, I believe, in the United States. I went there to homestead in 1913. The project was opened in 1909.

We have gone this far. We have been alive for 50 years. Our State is only 69 years old.

So we have proven reclamation to the Bureau of Reclamation. We have proven what it could do and what it would mean.

Now, as to all of this about State rights, and all of that—and Mr. Lloyd, our engineer, knows a great deal about this—there is a conflict between the rights of the State and the rights of the Bureau of Reclamation.

You have it confused in Washington. This is an age of confusion and deceit. And the brother of deceit was just over to visit us. I call him the father of deceit. I do not believe anything he says. We are following in a confused manner. We hardly know where we are going with all of this deceit.

But, anyway, back to this reclamation thing.

We have lived our 50 years. Some divisions of our project have complied with the requirements. We are entitled to adjudication of this water. We seem to be blundering along. There is some water there. The Bureau has the feeling they can take some more water out and start another project, irrespective of cost.

We have not had adjudication of the water after we have paid out to the Government so much of this first division of the project. We claim that today we are entitled to an individual adjudication based on an average use of water during this period of years, and we have the record of water necessary to irrigate crops.

The Bureau seems to take the idea that you can conserve some more. I would think of people living in a country for 50 years, that those who succeed there could not waste water or misuse water. There are some that would.

We, I feel, have proved reclamation. Reclamation started way back.

This representation that I am making of the Shoshone River Water Users Association comprises this Bureau of Reclamation Shoshone project and the individual projects that were there before reclamation started, before the Federal Government started reclamation.

I have lived in that country 46 years, and I have grown a family of which I am proud, and we have our grandchildren. But I am one

of about a dozen that is left out of all the people that went there to develop that land.

This water is the biggest asset the State of Wyoming has, but I think it gets back to a question of the State's rights. The State must have a right in this water that the Federal Government cannot override. We need this really for the use of the State, if we expect to grow, when the Federal Government owns more than 50 percent of the rights.

Now, as to these new States coming into the union, take, for example, Alaska. Alaska just came in and they reserve all of their rights, and the other States do, too.

Why should we be penalized? Our contribution to the Federal Government is much more than we can ever get back after they take it out of our State. The Senate has to pass on it.

Will you give us back a little bit for the development of our State?

I do not understand why our State should have been set up that way. It is a serious thing.

I believe Mr. Young said on our State rights that we must get that corrected if they expect to exist.

How will we support a State, that is, 40 percent of us, with the Federal Government in there. Then we have the problem of this wilderness project.

The Federal Government can do anything they please. We are just subjects of the Government, it would seem to me.

This is a great State, and I have given my life to it. I appreciate the State, immensely, and I appreciate the beauties and wealth of it, but it is only in its infancy in all these resources that we will develop.

That is not the text, entirely, of this article here, but I tried to say in a few statements what I think pertaining to it. I wanted to speak of the Bureau of Reclamation in the beginning.

Now the time has come when we are asking for an individual adjudication of the water based on past use, and that would have to be about right on the amount of water we would be entitled to.

Then there are other lands to be developed. We are happy to go along for other water that is to be used. We cooperate in every way.

You should, however, protect the people who have built this State. Fifty years is quite a long time. We must have some protection.

Without any quibbling, if we can settle with the Bureau of Reclamation, that is fine. If not, maybe if it got into the courts of the land, it will be settled, and it will maybe get to the Senate, but we are demanding that we have an adjudication of water.

I think we are entitled to it and hope that you gentlemen look on it with favor from that angle.

That is just one point.

You would not say this is a gripe because this is for the whole State. We represent and are representing 2,100 water users, the people and their families, and the wealth that those people have. We have been contributing to the Federal Government, so we are expecting to have the Federal Government cooperate with us.

I am very happy to have had the opportunity of speaking to you people, and these talks, to me, have been very interesting. Our State's rights are the main thing that I want to see protected.

Thank you, fellows.

The CHAIRMAN. Thank you very much, Mr. Bever.

Mr. BEVER. Yes, sir.

The CHAIRMAN. I must say to you that the good citizens of Wyoming are not alone in their feelings about protection of State's rights in many matters.

Mr. BEVER. Yes, sir.

Senator YOUNG. I would like to join with the States righter from Wyoming. I feel the same way.

The CHAIRMAN. Thank you very much, Mr. Bever.

The next witness is Veryl Hoover, of the Pacific Power & Light Co.

STATEMENT OF VERYL N. HOOVER, GENERAL MANAGER, WYOMING DIVISION, PACIFIC POWER & LIGHT CO., CASPER, WYO.

Mr. HOOVER. Senator Kerr, and members of the committee.

My name is Veryl N. Hoover. I reside in Casper, Wyo., and am general manager of the Wyoming Division of Pacific Power & Light Co. It's a pleasure to have the opportunity of appearing before you today.

With your permission, I desire to outline briefly how my company is utilizing Wyoming water, and then comment on the importance of water to our State's industrial development generally.

WATER USE IN STEAM-ELECTRIC GENERATION

In studying the future of Wyoming, the management of Pacific Power decided that by making an abundant supply of electric energy available for present and future requirements, it would build greater confidence in the State and stimulate industrial development of the State's wealth of mineral resources.

The economically feasible hydroelectric sites of any important magnitude have already been developed in Wyoming; other new sources must provide our power for the future.

Thorough investigations by company engineers show that steam-electric generating facilities, fired with local coal, are now the most economical method of producing electric energy in large quantities in Wyoming.

It is doubtful if electricity will be produced from atomic energy in Wyoming during the next decade, even though there are abundant uranium reserves in the State. My reason for saying this is that Wyoming has such abundant coal deposits. Coal is found under 41 percent of the land area, and much of it can be mined at low cost.

The CHAIRMAN. At the bottom of the page you say, "Coal is found under 41 percent of the land area."

Mr. HOOVER. Yes, in the State.

The CHAIRMAN. Of the State?

Mr. HOOVER. Yes.

The CHAIRMAN. You have about 100,000 square miles in the State of Wyoming?

Mr. HOOVER. Yes, sir.

The CHAIRMAN. Do you think that there is 41,000 square miles of it that is underlaid with coal?

Mr. HOOVER. I am sure of that, sir.

The CHAIRMAN. Go ahead.

Mr. HOOVER. Most of the Wyoming coal is of low rank, in the lignitic and subbituminous classes, which is not now usable for coking or other specialized purposes, but does make satisfactory powerplant fuel.

This doesn't mean that Pacific Power isn't interested in utilizing atomic energy for electric power production. Our company is actively participating with a group of other electric light and power companies and the Atomic Energy Commission in research and development of power from a gas-cooled reactor. Also, we have research progressing, in cooperation with other utilities, on direct conversion of heat to electricity. We shall be ready to use atomic power when the time comes.

COAL CONVERTED TO ELECTRICITY

After months of geological exploration and core drilling, a satisfactory field of lignitic coal, located about 15 miles northeast of Glenrock, was found sufficient and satisfactory to supply a steam-electric plant.

Discovering this particular coal deposit is a heartening story of a community's faith in itself. The potential coal deposit was called to our attention by a special group of citizens speaking for Glenrock's 1,200 people, who were seeking a new industry to take the place of an oil refinery that had been closed because of obsolescence. They were optimistic about the usability of coal deposits in the area and our explorations confirmed their optimism. Today, Glenrock is well on the way to becoming a thriving community. A substantial number of new homes are being built to take care of the population increase. According to Glenrock's Chamber of Commerce, the community's population at present is approximately 1,800 people.

Ground was broken at our Dave Johnston plant site along the North Platte River, about 6 miles each of Glenrock, on June 30, 1956. And, on December 20, 1958, an ultramodern 100,000 kilowatt steam-electric plant was officially dedicated. More than $23 million was expended for this generating plant and the related coal-field developments.

Our actual operating costs are in line with our estimates, and we are so well satisfied with this first unit that in May of this year we began the construction of a duplicate 100,000 kilowatt unit to be completed by the end of 1960 to meet the rapid growth in power requirements. This addition is estimated to cost $18 million. And, we will add another unit when necessary to carry the load, and others after that as more power is needed. This steam-electric plant site was planned with at least four generating units in mind. In fact, it can be expanded to an ultimate total of 1 million kilowatts as power needs grow. Because of the characteristics of our Glenrock coal, it can best be utilized near the source. Our plant is practically a "mine mouth" operation.

We purchased 2,575 acres of land so that there would be plenty of space for various new industries to locate near our plant if desired.

We consider it our duty and purpose as citizens of Wyoming to help the State grow, for we grow only as the resources in the territory we serve are developed.

Our management is very enthusiastic about Wyoming's future industrial development and economic expansion. A sizable investment has been made already to provide abundant electric power in advance to attract new industry. By the close of 1960, Pacific Power will have expended approximately $60 million for new electric facilities in a 5-year period, or approximately $1,500 for each of the 40,000 customers we serve in Wyoming.

The management of Pacific Power has affirmed many times the company's readiness to provide whatever quantity of electric power may be required in its service area for the development of new enterprises and the expansion of existing business and industry. Pacific Power is prepared to invest still more private capital to keep ahead of the State's electric energy requirements, and serve the best interests of Wyoming power users, at no expense to the taxpayers.

WATER NEEDED AT ELECTRIC PLANTS

As you know, both fuel and water are needed in abundance for a large-size, steam-electric power plant. This achievement at Glenrock would not have been possible if we didn't have water, and enough of it.

Although the Dave Johnston plant is located on the banks of the North Platte River, none of the water used in making steam came from the river. The plant's water supply for boiler makeup is pumped from four private wells which tap underground aquifiers. We use about 17,500 gallons of well water per day. River water is used only for cooling purposes, that is, cooling the used steam by passing it through a heat exchanger, so that the steam condenses into water, and is used over and over again. More than 40,000 gallons of river water are pumped through the condenser per minute.

The quality of water for boiler makeup is also important. You see, in a modern steam-electric plant the water has to be treated to the point where it is practically chemically pure, in order to reduce corrosion, scaling, and foaming. After treatment, our plant water is actually purer than most city drinking water.

Now I want to talk about what others are doing in the development and service to our State.

UTAH POWER & LIGHT CO. PLANS

Utah Power & Light Co. has begun the construction of a 150,000 kilowatt thermal plant in southwestern Wyoming near Kemmerer scheduled for service in 1963. Electric energy from the new plant will be transmitted by high voltage lines to Utah Power's customers in southwestern Wyoming, eastern Idaho, and throughout Utah.

A dam and storage reservoir are being provided upstream on the Ham's Fork River for plant cooling purposes. The Kemmerer site was chosen because there is plenty of water and coal in the area to supply this plant and its contemplated expansion.

IMPORTANCE OF WATER IN WYOMING'S INDUSTRIAL DEVELOPMENT

The experience which I have just related about steam-electric generation illustrates and emphasizes the importance of water in Wyoming's industrial development and economic expansion.

Water and coal, as electricity or in some other form, are two essential ingredients needed by the enterprises which seek to establish manufacturing plants and develop Wyoming's mineral and forest resources.

Wyoming has a vast storehouse of minerals, both metals and nonmetals, which are awaiting development. New techniques are constantly being perfected which eventually mean that the State's so-called low-grade ores will be extracted and processed here in the future, as demands for certain minerals increase, and as existing deposits elsewhere become depleted. To me, Wyoming is a sleeping giant, which is now awakening and beginning to flex its industrial muscles.

COLUMBIA-GENEVA

For example, the Columbia-Geneva Division of the United States Steel Corp. has been exploring low-grade iron ore deposits in the Atlantic City-South Pass area in Wyoming for about 3 years. At the same time, the firm has been acquiring water rights, so that when the decision is made to mine the iron ore it can be processed in an upgrading plant before shipment to blast furnaces at Provo, Utah.

The availability of sufficient quantities of water is the key to the economic feasibility of the propesed project.

ANACONDA COPPER

This great importance of water for industrial plants isn't something new in modern mineral processing. For instance, years ago when it was decided to mine and process the copper ores at Butte, Mont., the treating plant was located at Anaconda, Mont., 25 miles away, because that is where the water supply exists.

OTHER INDUSTRIES

I needn't remind you that if it were not for water, Wyoming wouldn't have eight modern petroleum refineries, five new uranium mills, a new sulphuric acid plant, three sugar factories, several dairies, creameries, bottling works, meat processors, and numerous other water-using plants processing Wyoming resources and products.

WATER NEEDS GROWING

Water is important to industrialists looking for a new location. Water is generally needed for processing purposes as well as for a great many other uses around an industrial establishment.

The trend toward manufacturing more synthetic products means that increasing quantities of water will be required as these industries grow.

A good example is the replacement of natural rubber and fibers by synthetic rubber and synthetic fibers. Pound for pound of the finished product generally requires more water to manufacture the synthetic item than the natural item.

Chemists have called water the universal solvent. Is it any wonder? Not many chemical processes are possible without water.

As far as I know, the development of Wyoming's mineral resources will in most cases involve chemical processes dependent upon water.

So will the making of woodpulp and paper and wood composition boards, as these industries become established in the State.

You might be interested to know that a large pulp and paper company is presently studying the feasibility of locating a plant in Wyoming. There is enough timber available; the source of water supply is being studied.

UNDERGROUND WATER

My company's experience in Wyoming, and the experience of others in Wyoming and neighboring States, prompts me to suggest that extensive studies should be made in an orderly manner of our State's underground water resources. Naturally, our governmental agencies should continue the surface water studies, and the investigations of treating saline waters.

A logical step has already been taken by the Wyoming Natural Resource Board in considering the possibility of converting abandoned oil wells into water wells for industrial uses, irrigation purposes, and livestock watering.

Wyoming has a modern underground-water law, passed by the 1957 legislature. It requires that a State permit be obtained before drilling a well for other than stock-water or domestic use, and that the State engineer's office administer underground water utilization.

What's really needed further is an organized program over a 5-year period, or even 10 years if necessary, to learn as much as possible about the underground water resources of the entire State. Except for a few isolated cases, not much is known about Wyoming's underground water.

RELATIVE WORTH OF WATER

Another facet of the proposed long-range water study would be to determine the relative worth of water for various purposes. By that I mean to relate general public benefits in terms of output and employment to the various uses made of water. Results of such an analysis should help to channel available water into the most highly productive use and help reduce wasting of water.

From what preliminary figures I have seen, the use of water in this region for mining and manufacturing has great production- and employment-creating effects. Wyoming water law recognizes this and accords a high priority to the industrial use of water.

UNDERGROUND WATER EXPLORATION

I definitely am not advocating curtailing or discontinuing the use of water for irrigation purposes.

In fact, Pacific Power has always aided in the advancement of irrigation, and historically we have always purchased available power from reclamation projects so that they could become economically feasible to build.

If an exhaustive investigation is made of the State's underground water as I just proposed, it's entirely possible that many more acres of Wyoming land could be cultivated because of the availability of irrigation water from underground sources.

Every time I travel by airplane between Wyoming points, I am constantly aware of the vast acreage that could be cultivated, if there were water. Perhaps water could be found in many places if explorations for water were carried on with the same determination and scientific approach as is done in exploring for petroleum and other minerals.

Just recently two satisfactory sources of underground water were found at Casper. Both wells are about a mile deep and have a certain amount of natural flow. Water temperature is about 118 degrees at the well head.

One well is being used to water the Casper Country Club golf course. The other well provides water for the Manor Heights housing project, and soft water at that. It's reported that about 250,000 gallons of water are withdrawn daily from this latter well.

These two examples are indicative of what can be done to obtain satisfactory sources of underground water.

Maybe the time isn't too distant when some municipal water supplies from surface sources will be supplemented or even replaced by underground sources.

Our future domestic water needs alone are increasing at an astounding rate because of two principal reasons. One is population growth and the other is higher use per capita.

IMMEDIATE WATER STUDY ESSENTIAL

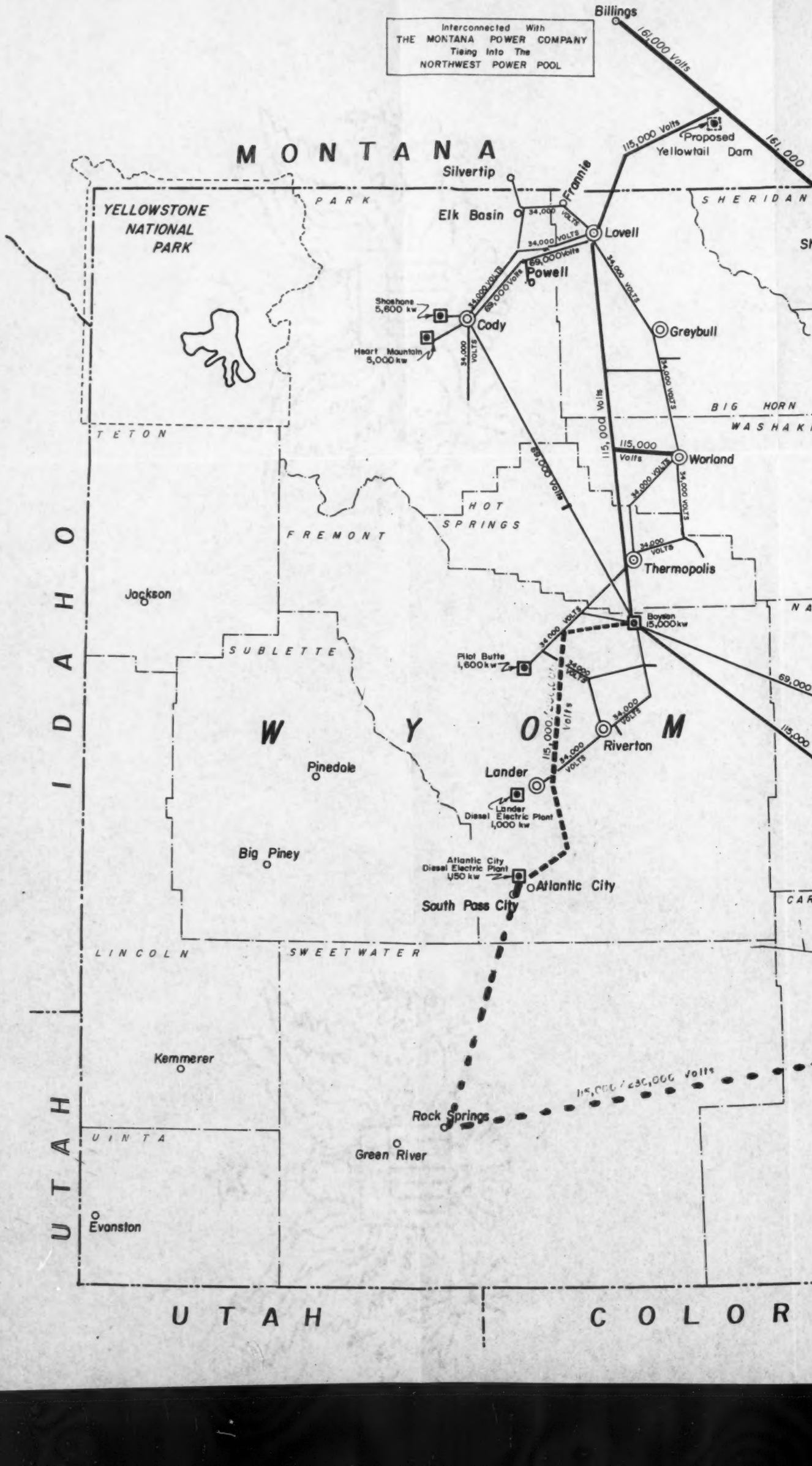
As our standards of living increase, as more water is applied to the land and more land is brought under cultivation, and as industrial production expands, the need for larger water supplies and for wise use and conservation of water will become extremely imperative in this region.

The problem must be given immediate recognition and study by the ablest people. The long-term economy and standards of living here in the West depend on water. To advance agriculturally and industrially and individually, we must make the best possible uses of all of our water resources.

Early in my statement I said that the growing power needs of Wyoming must be supplied in the future from sources of generation other than hydroelectric projects. I would like to discuss a little further a few factors relating to the power situation.

For many years, and in fact until last winter when the Dave Johnston plant went into service, most of the power in Wyoming was supplied to distributors from the Bureau of Reclamation's hydroelectric projects on the North Platte, Shoshone and Wind Rivers, and other interconnected projects. With the expanding use of power in this region, which is increasing at about 15 percent per year on a compound basis, it was apparent several years ago that these hydroelectric projects could not continue to supply all of the power requirements. In fact, the Bureau of Reclamation has informed us that it will no longer have power available to us on a firm basis after supplying the needs of so-called preference customers. We therefore built the Dave Johnston plant and have plans for expansion, as I mentioned briefly.

The hydroelectric projects, however, have a very important function to perform and this will increase in importance as the power supply shifts from a hydroelectric base to a steam-electric base of


Interconnected With
THE MONTANA POWER COMPANY
Tieing Into The
NORTHWEST POWER POOL
Billings
161,000 Volts
115,000 Volts
Proposed
Yellowtail Dam
161,000
MONTANA
Silvertip
Frannie
PARK
SHERIDAN
YELLOWSTONE
NATIONAL
PARK
Elk Basin
34,000 VOLTS
Lovell
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Powell
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Shoshone
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Cody
Greybull
Heart Mountain
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TETON
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Pinedale
Lander
34,000 VOLTS
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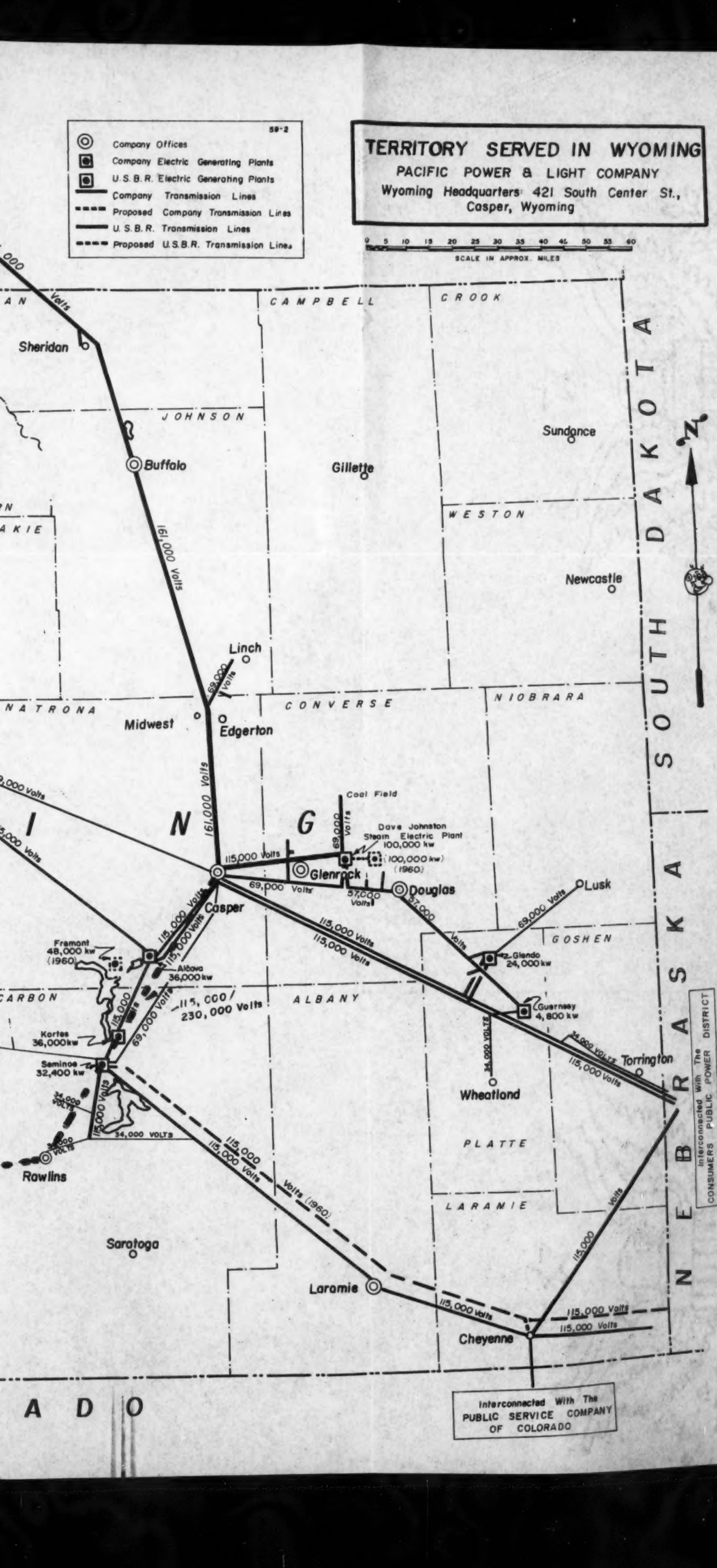

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generation. I refer to the peaking capabilities of the hydroelectric projects. We, the other utilities in the area, and the Bureau of Reclamation, are working in close cooperation to use all of the power-generating facilities to the best advantage. I am sure that we shall continue to do so to the best advantage. I am sure that we shall continue to do so to the maximum extent possible, under the law.

In addition to assuming the responsibilities and making the heavy investments for power generation, the utilities of the area are embarked on a program of expanding the high-voltage transmission grid. In 1957 we built a heavy-duty line from Casper to Billings. This line connects with the Montana Power Co. at Billings and also with the Bureau of Reclamation. The Bureau of Reclamation has several important transmission lines, and others are under construction and being considered for the future. The utilities are working closely with the Bureau in these studies.

Our company has plans to construct high-voltage lines from Central Wyoming into the southwestern part of the State to supply our own service territory and also to make possible the full integration of our generation with the systems of the Bureau and of Utah Power & Light Co. and Idaho Power Co. Our intention is to build enough capacity into these lines to take care of the present and foreseeable requirements for electric service in this area. The point I am making is that full coordination and integration of power facilities embraces not only generating plants but also the backbone transmission system.

We and other utilities are also working with the Bureau of Reclamation with regard to the interstate allocations of power from the Upper Colorado River project. We in Wyoming feel very strongly that a sizeable amount of power from that vast Federal development should be available to the power users of our State.

In closing, I would like to say again that Wyoming is on the threshhold of a period of tremendous growth, firmly based on development of our wealth of mineral resources. Water and power are essential to this expansion. The power supply is well at hand; in itself it is opening up the use of one resource, coal, on a very large scale. Our water picture is not quite as clear. Immediate attention should be focused on a program of finding out all that can be known about this important resource.

Mr. Chairman, I would like to have the map entitled "Territory Served in Wyoming, Pacific Power & Light Company" made a part of the record.

The CHAIRMAN. The map may be made a part of the record.

(The map referred to faces this page.)

Mr. HOOVER. I thank you.

The CHAIRMAN. Thank you very much, Mr. Hoover.

Are there questions?

Senator YOUNG. Yes, I would like to ask a question or two.

Is most of your steam generated power used for firming purposes?

Mr. HOOVER. No, firm uses.

Senator YOUNG. They are firm uses?

Mr. HOOVER. Yes, sir. That is the basis.

Senator YOUNG. Would you care to state about what is the approximate cost per kilowatt before taxes?

Mr. HOOVER. I cannot quite say what the exact cost is but we have in the past been buying a lot of Bureau of Reclamation power. Our costs to date have indicated that when all the wrinkles get smoothed out of the initial operation we will be able to produce electricity comparable to the price we paid the Bureau of Reclamation, which is, I imagine between 5½ and 6 mills.

Senator YOUNG. Do you have your steam generating plant right next to the coal fields?

Mr. HOOVER. It is about 14 miles from the coal field.

Senator YOUNG. Thank you.

Mr. HOOVER. Yes, sir.

The CHAIRMAN. Thank you very much, Mr. Hoover.

The CHAIRMAN. Mr. J. Emerson Utter.

STATEMENT OF J. EMERSON UTTER, A DELEGATE FROM THE WHEATLAND SOIL CONSERVATION DISTRICT AND WHEATLAND IRRIGATION DISTRICT

Mr. UTTER. Chairman Kerr, Senator Young and Senator Kuchel: I am J. Emerson Utter, and I am a delegate from the Wheatland Soil Conservation District and Wheatland Irrigation District.

The testimony will have to be in a little more general terms because the solution of our problem in Wheatland would encompass a greater area.

We have heard touched on here the prospective efficiencies in the area. We have heard considerable talk about potential development.

The initial concern and interest of this group and the State of Wyoming should be to emphasize the urgent necessity of transmountain diversion of the surplus water of the Green River. With the population center in the southeast section of the State and dependent on oi interested in the North Platte River and its tributaries; with the anticipated development of this section and the expected growth of the cities in this area; with the number of physically possible plans for transmountain diversion of surplus western Wyoming water; with the assigned hydroelectric revenues from the Colorado River development and the Missouri Intrabasin Agency; with the critical water supply and prospective deficiencies in the entire southeast section; the most economically feasible of the numerous physically possible plans should be given high priority on the agenda of national water resource development.

In behalf of the Wheatland Irrigation District and the Wheatland Soil Conservation District, may I project Platte County's interest in the State and national water resource development.

The Wheatland Irrigation District (Wyoming Development Co. by Frederic T. Carnes, Jr.) in Platte County, the inception of which dates back to 1879 at which date the only other large irrigation works in the Great Plains area were the Greeley and Longmont projects, has only two serious drawbacks.

First: It was initially developed with private capital, a stigma that once precluded it from State or Federal assistance in spite of the fact that such high risk capital has been chiefly responsible for the development of Wyoming into a leading irrigated agricultural State. Through the years of western water development such as the Grand

Lake-Big Thompson project in Colorado, the Wheatland project lay dormant due to a lack of capital and the necessary discrimination against corporate ownership. If the same continues in this new western water resource development, the last frontier of available supplemental water for Wheatland will have vanished. Second: Wheatland is at the base of a broad and fertile basin where topography, geographical location, and climatic advantages have lent it well to overadjudication of its available water supply.

The Laramie River Basin has this not in common with most river basins in the Rocky Mountain area, in that its erratic course, meandering streambed and broad, flat and level drainage have supplied it with more productive and irrigable land than is justified by the widely fluctuating Laramie River supply.

The Laramie River drainage area has been established at 4,600 square miles, by the U.S. Geological Survey. This drainage area of the Laramie together with its seven tributary creeks yields an 18-year (1939 through 1956) (Resources and Economy of Albany County, Wyoming 1959) average of 100,000 acre-feet of water at Jelm which has been adjudicated back to 417,000 acres of land (U.S. Geological Survey Water Supply Paper 469). This average available water supply as compared to the irrigable acreage accounts for the litigation, difficulty of administration, and also lack of industry development in the Laramie River Basin. Augmenting and stabilizing the Laramie River flow by imparting transmountain diversion water has been a subject of serious study since the early 1900's. The fact that this was a matter of concern nearly 50 years ago probably means the basin has somewhat stagnated in development since that time. With the population center in the southeast section of the State, with the productive land, favorable growing season, and industrial development potential, this general area should receive priority in consideration of water development and conservation of western waters. Impossibility of building a stable agricultural, livestock, or industrial economy on a fluctuating water supply has always been obvious, but in the restricted margin type of economy we now operate under the obstacles which appear insurmountable. This area, particularly around Wheatland, is without a doubt the most critically short of water of any area within the State. (Wyoming Natural Resource Board Annual Report of 1956.)

This problem is old and recognized and should be solved before new problems by new developments.

The Wheatland area has continued an extensive chain of surveys and investigations that started with the work of the Wyoming Development Co. to provide a solution to this now ancient problem of inadequate and unstable water supply. In addition to continuing and exploring the innumerable investigations of the original parent corporation, this new quasi-public corporation invested several thousand dollars in the Douglas Creek diversion investigation. (The J. T. Banner and Associated Report, December 1955.) The Consolidated Engineers of Wyoming were retained June 7, 1957, by the Wheatland Irrigation District to make hydrological studies of waters available and of administration of those waters for a sum of around $23,000. In 1959 the district participated in the $27,000 exploration of the underground water supply (1958 Geological Ground-Water Survey

of Platte County) in cooperation with the Bureau of Reclamation and the Wyoming Natural Resource Board. The district is also making a substantial contribution to the Bureau of Reclamation feasibility study that is presently being conducted in this area.

The above summarizes the group effort that went into this problem of stabilization which has been supplemented by extensive and desperate individual effort. The individual effort has centered around conservation of water and improvement of distribution in addition to some painfully expensive explorations of the underground water supply. In addition to consistent and constant land leveling for more efficient use of water, a program of canal relocation and concrete lining has been aimed at the most efficient transportation of this precious commodity.

Some 42 irrigation wells (1958 Geological Ground-Water Survey of Platte County) have been drilled by private interests in an attempt to tap this reported underground reservoir in addition to countless test drillings to try to establish potential and procedure. The Ringsby Ranch (Reconnaissance Report Supplemental Water Supply Wheatland Area, Wyoming, by Bureau of Reclamation) purchase in Carbon County, to complement the Wheatland water supply, was found to conflict with the best interest of water users on Rock Creek and to also hinge on replacement of part of the water diverted from the North Platte Basin with water from some other source.

The foregoing is an attempt to isolate and establish the problem and briefly deal with the various attempts to either solve or live with it.

In the 1956 Annual Report of the Wyoming Natural Resource Board these recurring and economically devastating droughts or water shortages were estimated to have cost the farmers of the Wheatland area $8 million in the course of the recent 4-year crop failure. In view of the present cost-price squeeze this did not come out of gross profit but left a substantial negative figure. This estimate makes no attempt to deal with the losses sustained by the businessmen of the area, which were in direct proportion to the agricultural losses as attested to by the number of available business houses and empty buildings in the area. If this abandonment and consolidation of farms and ranches continues the same must necessarily be true of business houses of the economic disintegration of the entire trade area. The Great Western Sugar Co. found it necessary to abandon a newly constructed and ultramodern factory because a qualifying yield of beets could not be sustained. Dehydrated alfalfa, protein supplements, and concentrated feeds must be imported from out of the area because production is not dependable enough to justify plant construction. Regardless of other favorable considerations no new industry has been attracted to this area for years due to the unpredictable nature of our water supply. The loss to agriculture, loss to business, loss of tax revenue, loss in real estate values, loss of new industry and industrial expansion have probably already equaled the cost of project stabilization and this problem is yet to be met.

The end result of these numerous investigations and surveys from the early 1900's down to the Bureau of Reclamation feasibility study presently being conducted have left no alternatives other than a three-point program of strict water conservation for maximum utilization, supplemental storage, and augmenting the water supply of the Lara-

mie River Basin. The three alternatives are so closely interlocked as to preclude effectiveness of one without the others. Extreme conservation measures on the Wheatland project and the rest of the Laramie River are ineffective or impossible without the construction of additional storage to house this conserved water for periods of reduced river yield. Storage sufficient to bridge the customary water shortage of the Laramie River Basin would, in addition to stabilizing the water supply for the Wheatland area, firm up the water supply for the entire river by easing Wheatland demands on the river in water-short periods. In effect, stabilization of the Wheatland water supply needs to be the key to the basin's difficulties. It is the opinion of the Consolidated Engineers that it is not economically feasible to construct any new storage structures in the Suitland irrigation system without providing an additional source of water to the Laramie River. The disappointing results of the individual irrigation wells and test wells (1958 Geological Ground-Water Survey of Platte County) in conjunction with the poor performance of the $27,000 wall now being tested by the Bureau of Reclamation remove the underground water supply of the Wheatland area as a major source of additional water. The 42 individual wells yielded only a total of 4,900 acre-feet of water in the 3 years, 1953, 1954, and 1955. This source would still be somewhat exploited and developed by individuals to the advantage of the rest of the basin users, if a more favorable electric pumping rate could be obtained.

The compendium of the years of research, investigation, and surveys (all investigation and survey reports are on file at the Wheatland Irrigation District office) finds this oldest irrigation project in the State and at one time largest in the United States to be surprisingly efficient in the transportation and distribution of water. The character and classification of the project lands also emerge high by comparison with other projects. The average productivity of the area, drought years excepted, prove the project to be worthy of State and Federal attention. In the development of the Nation's water resources and especially in the development of Wyoming's portion of the Green River waters, the Wheatland area should have at the very least equal consideration with new start projects. Complete and adequate evaluation of beneficial use of acre-feet of water and economic return of dollar invested in stabilizing the Laramie River as compared to high altitude, short growing season, irrigated grassland developments should be a factor in determining how best to utilize that portion of the Green River water allocated to Wyoming under the Dolorado River Compact.

In culmination we find the Wheatland Irrigation District tailored to and essential to a large service and trade area, but in dire need of two requirements, beyond the project's ability to provide. Control and additional storage reservoir, and supplemental water are the two vital essentials that are forever precluded without Federal assistance. For a small portion of the money and water needed to develop a new project of questionable feasibility this tested, proven and developed area could be supplied with both of these essentials to the benefit of numerous interests.

County, State, and national——

Senator KUCHEL. Can you testify as to how much money you are talking about in that additional storage reservoir you mentioned?

Mr. UTTER. I hesitate to put a figure on the amount of supplemental water that we need for project stabilization or the amount of additional storage for fear of conflicting with the feasibility study that the Bureau is coming up with.

Senator KUCHEL. You do not think you are eligible under the small projects law for a noninterest loan?

Mr. UTTER. I would rather doubt that we are.

Senator KUCHEL. Can you indicate generally?

Mr. UTTER. That would mean it would have to be a figure above $5 million. We did make an attempt to get under the small projects loan the year before last and found we did not meet the criteria and qualifications that were necessary.

Additional storage, close enough to the project to trap, control and conserve flash floods and also to serve as a control dam to more efficiently administer and conserve project waters in addition to supplemental water to stabilize the Laramie River over short yield years, is an investment the State cannot afford to ignore.

While Wyoming may not yet be ready for this transition, serious study should be given to some workable method of detaching or freeing the water from the land to allow it to seek its own level of maximum beneficial use, municipal, industrial, or agricultural. The adjudication of water to a specific lot of land was necessary to assure orderly protection and compensation to the early settler and original developer, but until water is made a negotiable asset the development of Wyoming remains irrevocably tied to the conception of this same pioneer of nearly 100 years ago as to what was the best land in the most productive area.

Section 41–3 Wyoming Statutes 1957, under which Geneva Steel obtained water for their development was a step in the right direction, but only a step.

I thank you, gentlemen.

The CHAIRMAN. Thank you very much, Mr. Utter, for your statement. It was very illuminating and a good statement.

At this point in the record there will be inserted a letter from Mr. Olaus J. Murie, director, the Wilderness Society, that has been addressed to me with the request that it be included in the record.

(The letter referred to follows:)

THE WILDERNESS SOCIETY,
Moose, Wyo., October 2, 1959.

HON. ROBERT S. KERR,
U.S. Senator, Chairman, Senate Select Committee on National Water Resources, Laramie, Wyo.

MR. CHAIRMAN: I would like to comment on the matter of using our water resources. When someone sets out to deal with a single resource, becomes expert or very much interested in a single resource, he is prone to disregard or not to know about other interests. From one end of our Nation to the other, people are aroused over some of the actions of water engineers. Those interested in other values that would be harmed or destroyed by dams in certain places, cannot seem to break through the barrier and be heard or understood. I could cite published articles illustrating this fact.

In the developing of hydroelectric power on the Columbia River system for example, the engineers ignore the valuable and highly desirable salmon which spawn in those waters, and give only lip service to inadequate facilities for conserving them.

Let me give an example right here at home. The Bureau of Reclamation wants to build the Narrows Dam in the beautiful canyon of the Snake River. The Army Corps of Engineers has blueprints for a whole series of revettments and dams all the way up the river and its tributaries, ignoring the fact that we have here a national park. Apparently they do not know that in Jackson Hole such plans would destroy important beaver ponds, goose and trumpeter swan nesting places, the feeding of moose in summer, and so many other aspects of natural life here, which people of our country by the thousands, and from every part of the world, come to enjoy. Recreation of the highest type is the business of Jackson Hole, one of the rare beauty spots of our Nation. We should all cherish such a place for what it is. We would say to these engineers, "Leave us alone so that we have a good part in shaping a fine American culture."

What we sorely need is coordination of Government activities, to go slow, and not hurry to destroy the degree of democracy we have achieved so far, in allowing different interests to be considered. Please place this in your records.

Sincerely yours,

OLAUS J. MURIE, *Director.*

The CHAIRMAN. It now being a little after 12 o'clock, the committee will recess until 1:45 o'clock, at which time we will hear from Mr. Elton Trowbridge.

(Whereupon, at 12:02 p.m. the hearing was recessed to reconvene at 1:45 p.m. of the same day.)

AFTERNOON SESSION

Senator McGEE (presiding). Ladies and gentlemen, the afternoon session will come to order.

As the chore boy of this outfit, I have to hold the fort until they get their bags packed because the Air Force has to transport their stuff out while we are here for the balance of the hearings this afternoon. I will serve as the housekeeper under those circumstances. But we have to move right along. We have yet to receive approximately 20 witnesses and we have to break off here at 3:20 in order for them to get to the airport so that the plane will have the wheels up by 4 o'clock. In order to do that we will have once again to ask you very respectfully to confine your oral statement to between 3 and 4 minutes and then submit your more detailed statement for the record.

Again, it is the record that will contain the mine of information that will influence the ultimate decisions and shape the ultimate policies.

The first witness this afternoon is Mr. Elton Trowbridge, from Saratoga.

STATEMENT OF ELTON TROWBRIDGE, REA COOPERATIVES

Mr. TROWBRIDGE. Senator McGee, I am appearing here for the REA cooperatives in the State of Wyoming.

Senator McGee, I have my report written out and I am sure that I can read that report to you in less than 4 minutes.

Senator McGEE. If you can read it in less than 4 minutes, you are in.

Mr. TROWBRIDGE. There are several statements here that I am sure that you folks could spend an entire afternoon on. In fact, I think the U.S. Senate has spent many months discussing several of the statements that are made here. But I shall read them to you.

Mr. Chairman, and gentlemen of the committee, my name is Elton Trowbridge. I am a rancher from Saratoga, Wyo., located in the North Platte Valley. I have been very close to the Rural Electrification program from its inception and I have watched the original building program of the Wyoming REA systems and have watched their growth very closely. I appear here today as the representative of the Wyoming State Rural Electrification Association. The Wyoming State REA Association is an organization consisting of the 15 rural electric cooperatives in Wyoming. The oldest of these cooperatives was energized in 1937 at which time only about 2 percent of the farms and ranches in Wyoming had central station electric service. Today approximately 92 percent of the farms and ranches are electrified. Since 1937 we have built approximately 16,000 miles of power line to serve approximately 23,000 consumers of whom approximately 12,000 are bona fide farms and ranches. Within the past 10 years the average kilowatt-hour used by all REA consumers in America increased from 121 kilowatt-hours per month to 311 kilowatt-hours per month in 1958. No doubt the Wyoming growth has exceeded this.

As adequate low cost dependable electric power is essential to the development of our State and Nation, we support the development of our water resources to their fullest extent in keeping with sound economic practices. We believe this development of water power should take this consideration, and should not interfere with existing water rights for irrigation and water for municipal use. Consideration must also be given to the economic values of flood control, recreation, and wildlife conservation. It is the feeling of the Wyoming REA Association that Congress should watch the cost allocation of multipurpose dams very closely. If the power program is to be developed in this western area surely power should not be expected to stand more than its fair share of the costs.

It is a well known fact that the development of hydroelectric units must be coupled with thermoelectric units in order to derive the maximum benefits from the hydroelectric units. Therefore we believe that all electric utilities should share the responsibility of developing the necessary thermoelectric units in the development of our water resources.

Evidence that the rural electric systems are sincere in this belief is that through the Tri-State Generation & Transmission Association, an organization consisting of 29 rural electric systems in northern Colorado, western Nebraska and Wyoming, they have a loan contract in the amount of $9,680,000 that is earmarked for the construction of a thermoelectric unit. Preliminary engineering studies have been made and the unit will be constructed when it becomes necessary. This power will then be incorporated into the U.S. Bureau of Reclamation power grid.

The necessity of waterpower becomes very evident when a review of future power requirement studies is made. The Tri-State Generation & Transmission Association of which 11 Wyoming rural electric systems are members, estimate that their load will more than double in the next 10 years. In 1958 the maximum kilowatt demand of the Tri-State was 105,000 kilowatts and they sold 438,700,000 kilowatt-hours of energy. In 1968 the estimate shows that the kilowatt

demand will be 260,000 and the kilowatt-hour consumption of energy will be 1,200 million. Ten-year requirement estimates of the U.S. Bureau of Reclamation in the North Platte River district have always seemed to be exaggerated but in every case it has been proven that they were very conservative and never has a U.S. Bureau of Reclamation estimate of this area been high enough.

Wyoming desperately needs a large block of power in the southwest corner of the State and this power should be brought into the State from the upper Colorado River projects. Northern Wyoming also needs a large block of power that should be brought in from the Yellow Tail Dam.

We feel that the Congress of the United States would be very foolish to spend large sums of money to build hydroplants to furnish power to preference consumers and not spend enough more to take this power into the load centers, and that they should be very careful not to sell large blocks of power or total outputs of generation plants to private utilities at the bus bar.

In thinking of the many uses of water, practically all of these uses deplete the amount of water to a greater or lesser degree with the exception of using water to develop hydroelectric power. Under proper planning and management water may be used over and over in a given watershed. Millions of kilowatts of power can be generated and yet the same amount of water could arrive at its destination to be used for irrigation, municipal, and industrial uses.

In closing let me say that the planning stakes for the development of water resources and especially power must be set far into the future. They must be set carefully and intelligently if our God-given water resources are to continue to meet the needs of all generations in the future.

Senator McGEE. Thank you, very much, Elton.

The next witness is Mr. Orr Garber.

STATEMENT OF ORR GARBER, WYOMING NATURAL RESOURCE BOARD

Mr. GARBER. Thank you, Senator McGee.

My name is Orr Garber, Big Horn, Wyo., a member of the Wyoming Natural Resource Board. It has been my privilege to have served on the National Board of Directors, National Association of Soil Conservation Districts and at the present time to be Wyoming's representative on the National Association of Soil Conservation Districts' Public Lands Committee.

It is a pleasure to endorse the statement of the Wyoming Natural Resource Board, presented to you by Mr. Milton Coffman.

Thank you, Senator McGee, for your invitation to appear before this committee.

I think that it is good that Senator Kerr, and this committee, is holding these hearings to plan for our national water needs. Water is now precious but will, no doubt be our most precious resource in the future.

As a Wyoming Soil and Water Conservation District supervisor, I will state to you briefly, some of the water problems foremost in Wyoming and neighboring States.

Under State law, locally established and operated soil and water conservation districts provide the perpetuating spirit of 1776. We board members take an oath of office. We pledge to maintain and preserve the tax base.

The average operator, in the West—even if well established, finds his overhead high, his income low. When he starts thinking himself out of this situation, it dawns on him that he is living in a new era of pioneering. He no longer can go West for more new land. By applying water and other conservation practices he best increases production on existing acres. By having thought his way to this conclusion, he either sells out to a neighbor or goes to work developing his water potential, combining good conservation practices, including good livestock and plant varieties, to assist him in his battle for a better income.

The need for continued assistance from the Bureau of Reclamation is a necessity. Analysis of the overall irrigation picture in Wyoming shows that the Bureau has developed 10 percent of the irrigated acres; the individual, 90 percent. Therefore it seems desirable to promote water development through the efforts of the individual.

In this area of the United States where so many acres are public lands, in fact 25 percent of the total area of the Nation is public land, we are looking for a way to personalize this public land heritage. Bureaucratic administration of these public land acres has kept proper water development from being established as compared with adjoining private lands.

We should be able to recognize by now that Russia failed in its collective land use scheme because of the failure to personalize the responsibility of care to the land. Proper development of our public land in the United States has failed for the same reason.

This situation should be corrected by coordinating the use and development of public lands by the individual, through the development of a soil and water conservation district farm and ranch plan. The public land administering agencies and the Soil Conservation Service could assist the governing soil and water conservation district board and the operator in developing a coordinated plan of land use, thus the personalization would be effected and the benefits of proper coordination would be established.

Some progress along these lines has been made. ACP payments can be used to assist on public lands. The use of Public Law 566 and the amendment 1018 is barred to the individual because of the legal requirement for two or more individuals to participate. It is common for a farm and ranch operator in these Western States to occupy a complete watershed. Some of the finest examples of upstream development are to be found on such farms and ranches.

It is wrong to restrict developing the water potential on the individual basis. As long as this restricting situation exists, personalization and coordination of the public and private lands cannot be.

The Great Plains program was created to stabilize the economy of the Great Plains area of this Nation. It is doing the job in that area. The proven principle of this program could be extended to the public land areas, to assist in coordinating the use of our public land heritage to private lands.

Big damsites are limited and irreplaceable, yet Congress appropriated money for their construction without considering the work necessary by individuals to be done above them to protect them from siltation and ruin.

From an airplane, it is easy to see a "too little, too late" situation developing all too fast.

Give the average individual some financial assistance and with the help of his Soil and Water Conservation District, he will do the necessary upstream work to protect these damsites.

If in the future, Congress sees that the individual is not keeping pace in protecting the future of big dams, big dam construction must be slowed down until this protective upstream work is completed or is done simultaneously with the construction of the big dams.

This Nation cannot afford to lose big damsites to siltation.

Noxious weeds spread down natural watersheds, thus creating a needless and endless expenditure for control. If Congress would provide money to the public land agencies to correct this situation on the headwaters, much expenditure of money by the individual for weed control would become unnecessary, making this money available to him for water development.

Much water in the Western States is being lost to overdensity of stands of submarginal timber. For example, in my home area, the Big Horn Mountains, streams that were good fishing in the 1930's are now dry in the summer. We must merchandise our way out of this situation. By so doing, we will provide and maintain recreation areas, we will provide forage for game and domestic animals and restore our water potential.

If the individual is to continue to contribute to the development of the water resource of the West as he has in the past, Congress must correct the situation brought about by the *Pelton Dam* decision.

If the Wyoming Association of Soil and Water Conservation Districts, at their forthcoming convention, wishes to make further recommendations, I would appreciate the privilege of submitting same to this committee for their consideration.

Thank you, gentlemen, for your time and consideration.

Senator McGee. That will be granted. Thank you very much.

Are there any questions from the committee?

Senator Kuchel. No questions. Thank you, sir.

Senator McGee. Mr. Joseph Hessel, the Assistant Regional Forester, U.S. Forest Service.

STATEMENT OF JOSEPH HESSEL, ASSISTANT REGIONAL FORESTER, U.S. FOREST SERVICE

Mr. Hessel. Senator McGee and members of the committee, I am here primarily to call your attention to the vital relationship of the national forests in Wyoming and other States in the West to water production and soil and water conservation and flood prevention. I have no statement because the Chief Forester will present an overall statement of the water situation and needs on the national forests in all of the States. The Wyoming situation and needs will be included in that statement.

As you know, in our region we have the national forests in Colorado, Wyoming, and South Dakota. The Shoshone National Forest in northwestern Wyoming is the oldest forest in the United States and it is appropriate at least to call attention here, I think, to the long-range national forest program which provides for a great deal of work as much needed in increasing water production and preventing erosion and floods.

This national forest program was presented to the Congress by the Secretary of Agriculture. I am sure you are all well aware of the contents of that program.

It must be pointed out that one-fifth of the land in the West is included in the national forest, one-third of the precipitation that falls in the West falls on these lands. Half of the water produced comes from the national forest lands.

The job on the national forest is no longer a custodial job. It is a multiple-use management job that requires stepped-up development and protection efforts and investments. Wyoming National Forest, just as all those in all other States where national forests are located, and especially in those States here in the West, needs particular attention because water means life itself.

We know what the job to be done consists of and we want you folks to know of the need that exists there.

If there are any questions I will attempt to answer them.

Senator McGee. Are there any questions from members of the committee?

Thank you very much, Mr. Hessel.

Senator McGee. Mr. Raymond Price, Regional Director, Forestry Service Station, U.S. Forest Service.

STATEMENT OF RAYMOND PRICE, REGIONAL DIRECTOR, FORESTRY EXPERIMENT STATION, U.S. FOREST SERVICE

Mr. Price. Mr. Chairman, Senator McGee, Senator Kuchel, Senator Young, my name is Raymond Price. I am Director of the Forest Service Experiment Station which serves these central Rocky Mountain States and the adjacent Plains States.

Our general headquarters is at Fort Collins, Colo. We have a research center here on the campus in cooperation with the University of Wyoming and other interested agencies within this area.

As Mr. Hessel has stated, the Forest Service has presented a 10-year program specifying many things that need to be done on the forest in connection with including the water problem. In that program is provision for research. Research is the handmaiden for progress. We need the information from research to help guide the action program in connection with this national forest program.

In connection with the research, there is provided that an overall increase for some 17 major fields in connection with the forest program be made.

These fields include forest genetics, and also the requirements for forest recreation and many other aspects of the forest program.

There is provided in the overall program for 17 special laboratories and greenhouses over the country to provide the necessary research facilities. There is also provided some 30 office laboratory facilities over the country to facilitate the research program.

Wyoming is important in this research program. There are many problems found in Wyoming that are basic in nature which apply to other parts of the country. So in this program there will be provided approximately a quarter of a million dollars for the necessary research program, including the water aspect.

Also, since multiple use is important in the area, there will be provision for related programs in timber, in timber utilization, in range, wildlife and in recreation. There is also provided in the area a facility for an office and laboratory to sustain this research program.

I think that is all I have, Senator, unless there are some questions. As Mr. Hessel stated, the overall statement has been provided and I think will be made available to the committee.

Senator McGee. Thank you very much. Are there any questions?

Senator Kuchel. Yes.

You made reference to these proposed new research facilities. I serve on the subcommittee on the Agriculture Appropriations, and I am aware of all of the new proposals. I may say that I think most members of that committee are seriously considering putting into effect this program. I don't suppose all of the research the Senators asked for will receive appropriations. But I think many of them will be started with another session of Congress.

Mr. Price. I think you are right, Senator. The overall program is correlated on a national basis and the problems will be attacked where they can be best attacked, where the facilities are available and the problem exists. I think by and large most of the research centers have been provided in the total.

Senator McGee. Thank you very much, Mr. Price.

Senator McGee. I trust my colleagues will appreciate how much we have been going to all ends to try to make them feel at home. You will recognize this sound over here. This is all we hear in the Senate all the time. They are redoing the east face of the Capitol and the trip hammer gets away while we try to hold committee meetings. Relax and enjoy it.

Do you have a report to make on the ball game, Senator Kuchel?

Senator Kuchel. I am glad to say the transplanted Dodgers from Brooklyn to Los Angeles won the world's series, 9 to 3, and I imagine there will be dancing in Ovara Street there.

Senator McGee. At this point it will be appropriate to include in the record a letter of transmittal and statement by the Commissioner of the U.S. Bureau of Reclamation, Floyd E. Dominy. Floyd is a Wyoming man, graduated from the University here and worked extensively in the State and his statement and the accompanying charts and reports will be added to the record at this point.

(The information follows:)

Department of the Interior,
Bureau of Reclamation,
Washington, D.C., October 1, 1959.

Hon. Gale W. McGee,
U.S. Senate, Washington, D.C.

Dear Senator McGee: I am pleased to respond to your request for this statement on existing reclamation facilities and potentialities for water resource development in Wyoming for your use in connection with the hearings by the Senate Select Committee on National Water Resources.

It was a particular pleasure for me to assemble this material because of my continuing personal affection for the State of Wyoming, developed, as you know,

during my days at the University and in the early years of my professional career.

May you have a safe and enjoyable trip West.

Sincerely yours,

FLOYD E. DOMINY, *Commissioner.*

POTENTIALITIES FOR WATER RESOURCE DEVELOPMENT IN WYOMING

A report prepared by Commissioner Floyd E. Dominy of the Bureau of Reclamation, Department of the Interior

The Bureau of Reclamation is currently engaged in a $190 million construction program wholly within the State of Wyoming. Other reclamation projects partly within and of great potential value to the State are being built at a total estimated cost of $609 million (see table 1). These latter works, of course, include such large projects of areawide significance as the building of the Flaming Gorge storage unit and the transmission system of the five-State Colorado River storage project, and the transmission system of the nine-State Missouri River Basin project.

The total Federal investment in reclamation works in this State is close to $200 million. It has been a sound proposition for the taxpayers of the Nation to develop the productive but latent water resources of Wyoming. Not only will the reimbursable project costs be returned by the users of the water and the power, but the lasting works will remain useful for generations after all the initial costs have been paid off. Pathfinder and Buffalo Bill Dams—built half a century ago—stand as strong against the torrents today as then. To build them now would cost many times the original price tag. They will serve indefinitely.

Wyoming reclamation projects have provided opportunities for livelihood and investment. Total value of reclamation crop production in this State in the 50-plus years of reclamation activities aggregates $244 million. The 242,000 irrigated acres in these projects are among the most valuable farmlands in the State—in 1950 they produced 20 percent of the State's crops, valuewise.

Local residents on the farms and in the project towns have paid in an estimated $46 million in Federal income and excise taxes since 1940 as a result of the increased farming and business activity that the projects brought about.

Presently, nine Bureau of Reclamation powerplants are operated in the State of Wyoming with a total installed capacity of 160,400 kw. To date Bureau plants in Wyoming have generated over 7 billion kilowatt-hours of energy. This is sufficient to supply the present needs of the city of Cheyenne for over a half century.

Thus, it is clear to anyone acquainted with Wyoming's water situation that a significant part of the development of its water resources, especially for irrigation, has already occurred.

Of Wyoming's gross land area of just under 100,000 square miles, most recent census figures indicated that about 56 percent, or 35 million acres, is devoted to agricultural use. Of that acreage, most is devoted to cattle and sheep ranching. But 3.6 percent, or 1¼ million acres, is irrigated. Other estimates place the current irrigated acreage at about 1.6 million.

The water supply in comparison with available irrigable acreage indicates that overall Wyoming is presently a "have" State in regard to water. In this respect Wyoming is fortunate because so many other States are every day more conscious of facing major water deficiencies. However, some sections have virtually reached the limit of economic development of local water resources.

Of Wyoming's four major drainage basins, the Snake River and Great Basin drainages are on the west, and the Colorado River drainage on the southwest. The fourth drainage, tributary to the Missouri River, makes up 76 percent of the total area. Approximately 83 percent of the water that originates in the State flows out past its boundaries. Interstate compacts or Supreme Court decrees control most of the entire water supply, and thus regulate the extent of development.

The eastern three-fourths of the State is in the Missouri River Basin. It has about 74 percent of all irrigated land in the State.

On the north is the Big Horn drainage which has the second largest acreage of irrigated land in the State—approximately 400,000 acres. This area includes irrigated lands on the Riverton and Shoshone reclamation projects and the

newly completed Hanover-Bluff unit, also the Owl Creek unit of the Missouri River Basin project which is under construction. Also to the north are the Powder and Tongue Rivers with approximately 113,000 acres of irrigated land. In the northeast corner are the Cheyenne and Belle Fourche Rivers which together provide water for some 12,000 acres of irrigated land.

The prospects are not too good for future additional large-scale irrigation developments in this northeastern part of the State. Water supply is one factor but there are other and greater ones, including economic aspects, law limitations, and environmental limitations.

For illustration, let's take the Powder River area. Our report on that division was transmitted to local interested persons and State officials 3 years ago.

Our report found that in the Powder River area each family-sized farm should have about 3 sections of grazing land in addition to its irrigated land. This is about the average amount of grazing land that ranchers operating irrigated farms under the Sahara ditch need to provide a balanced, profitable operation. Irrigation cannot be profitably undertaken independently of the adjacent livestock economy—the two must be integrated. Naturally the irrigation development must have the full support of the local community.

The Powder River Basin and other livestock-base areas face a similar stumbling block in the acreage limitation of reclamation law. The traditional 160-acre single-ownership acreage limitation has been increased by special legislation during the last decade for the Eden project, the Owl Creek unit, and for the Seedskadee project of the Colorado River storage project, within the concept of an economic-size family farm.

Further problems, which must be solved at the State or local level, are illustrated by the present lack of progress toward developing the Shoshone extensions unit. After detailed studies of this proposal over several years, the Bureau released its findings to the effect that about 56,000 acres of arable land in the vicinity of the existing Shoshone project could be irrigated. Such a project would be financially feasible and economically justified.

The unit was designed to utilize capacity which had been built into Shoshone project works in expectation that just such an expansion of the irrigated area would some day take place. It was based, however, upon an assumption that water users from the Shoshone River would agree to limit their use of water to the amount determined to be necessary for efficient operation. This the irrigators were unwilling to agree to.

Consequently, the scope of the project was limited to about half of the potential acreage, an area which could be served without infringing upon historic use of water. The owners of the lands which appeared to be best suited to such development were not interested in irrigation, so an alternative plan of public land irrigation and supplemental water for existing irrigated lands was selected for study.

This plan, too, has been opposed by the water users on the Shoshone River. At the present time, the Bureau has no active program for the Shoshone extensions unit, pending the findings of studies being conducted by the State.

Several factors beyond our control which have important impact upon the expansion of irrigation in Wyoming, or anywhere else, for that matter, are illustrated by this story.

Now let's look at the southeastern area which has two-fifths of the irrigated land in Wyoming. In the North Platte Valley are the Kendrick and North Platte Reclamation projects plus extensive Federal power developments. The extreme southeast corner of the State is tributary to the South Platte River drainage.

What is the potential for further large-scale irrigation developments here?

The North Platte River originates in Colorado, flows north approximately to Casper, and then heads east and south. In the upper reaches, environment dictates a livestock economy. Irrigated land is used principally for providing a feed base for livestock.

The soil over much of the area is a rather thin mantle. The land, the agricultural economy, and the climate generally cannot support intensive agriculture. Any further depletion of water in this area would require replacement for prior downstream rights.

Below Casper we find two principal complications: lack of water and lack of large blocks of arable land which can be developed economically. The tributary Sweetwater drainage has very little arable land and is a livestock area. The tributary Laramie River drainage already is developed nearly to the limit of its present water supply and contains little arable land that could be economically

developed. The southeast corner, near the Nebraska line, has some beautiful arable lands but no water.

From the broad viewpoint, then, the North and South Platte drainages are already developed about to the limits of water supply or available land for large-scale development. Admittedly we have not evaluated or examined every possibility; hence this broad generalization is subject to modification by further investigation.

We have cooperated with the State of Wyoming in studies of various possibilities for importing water to the North Platte drainage from the Colorado River Basin. Such diversions are entirely possible from an engineering standpoint. They are very costly, however, and generally cannot meet the tests of financial feasibility and economic justification under the present ground rules. Such potential transmountain diversions also have many other problems that would require solution. They include legal aspects, replacement of diverted water where necessary, compact provisions, and other matters. These difficulties should not preclude entirely further studies of transmountain diversions.

A few years ago we prepared a report on rehabilitation of the La Prele Dam. Our plan was not acceptable to the water users. Several years ago also we investigated the possibility of pumping imported water to lands in the Goshen Park area. This appears to be financially infeasible. At present we are trying to work out a satisfactory solution to the Wheatland project's water problems, investigating the possibilities of pumping ground water for additional supplies.

The western part of the State has three different draintage basins: the Snake, the Great Basin or Bear River, and the Green River. The Snake River drainage is predominantly a mountainous water supply area having about 67,000 acres under irrigation.

Formal dedication rites were held recently for the Palisades Dam and Reservoir in Idaho, 8 miles west of the Wyoming border . The dam backs water up the Snake River about 5 miles into Wyoming. Its first storage was in 1956.

Wyoming has been a beneficiary in an indirert way from the Palisades project. To stock all of the headwaters of the upper Snake River Basin, the Bureau transferred $427,000 of Palisades project construction funds to the Fish and Wildlife Service for a fish hatchery on the National Elk Refuge near Jackson.

The Forest Service has taken over recreational management of Palisades Reservoir, and it gives promise of being one of the outstanding artificial lakes of the Rocky Mountain area.

We are investigating various potential storage sites on the upper Snake and its tributaries above the Palisades Reservoir. The purpose of the investigation is to develop data on multipurpose storage and regulatory facilities which could be used to provide cyclical holdover storage for irrigation.

Present activities of the Bureau of Reclamation in the upper Snake River Basin area of Wyoming are now centered primarily in the general investigations field, although for a number of years the Bureau of Reclamation's Minidoka project has utilized the water stored in Jackson and Grassy Lakes. Jackson Lake, and to a lesser extent, Grassy Lake, is a major attraction for tourists in this tremendously scenic area.

The 1,400,000 acre-feet of storage of Palisades Reservoir has allowed changes in the past operating procedures of the storage reservoirs for the Minidoka project, which, in turn, has made it possible for the lake level of Jackson Lake to be maintained at a fairly constant level during the summer tourist season. This holding of the lake at a constant level rather than the fluctuations which have occurred in the past, leaving unsightly mud flats during the tourist season, is, of course, of considerable importance to the tourist trade.

In addition, the coordinated operation of the various reservoirs in the upper Snake River system, including the new storage in Palisades Reservoir, has been of considerable importance in reducing flood damages in the area.

Currently, the Bureau is investigating the possibilities of upstream multiple-purpose storage in the upper Snake River basin above Palisades Reservoir. The purpose of our present investigation is to develop data on alternative multiple-purpose storage and regulatory facilities which could be used to provide holdover storage for irrigation, develop a head sufficient for installation of power generating facilities, and to provide flood control. The investigation covers all of the possible sites on the main stem of the Snake River, as well as the tributaries entering the river above Palisades.

As far back as 1932, the Bureau of Reclamation began surveys in the upper Snake River area of 24 reservoir sites, which included field surveys and geologic explorations of certain individual sites.

These explorations, water supply studies, power and economic studies, and preliminary plans and estimates for alternatives at the Alpine site on Snake River, on major tributaries above the Alpine site, on the Snake River at other sites, as well as various combinations, are nearing completion. A public presentation of alternative development proposals will be made to Wyoming interests prior to the formulation of any project plan.

There are several other potential developments which require further study. The Great Basin or Bear River drainage has about 56,000 acres of land under irrigation. Coordinated development of the Bear River (which flows in three States and crosses State lines five times) is now made possible through the bill approving the Bear River compact which was signed by the President on March 17, 1958. The Woodruff-Cokeville project on the upper Bear River in Utah and Wyoming would furnish supplemental water supplies to roughly 40,000 acres of land which presently have insufficient water supplies.

The Green River drainage offers the greatest hope for future irrigation development in Wyoming. Approximately 261,000 acres were irrigated in this area in 1949. Wyoming estimates place the current irrigated acreage close to 300,000.

Particular circumstances are involved in development and use of water in the upper Green River basin. The streams flowing from the mountain fringes are largely uncontrolled; the need is for storage facilities so that spring runoff can be held for use during the summer growing season. Because the high plateau areas of the Green River basin range in elevations from 6,000 to about 8,000 feet, the growing season is short and the agricultural economy is limited to the production of alfalfa, hay and pasture, and small grains as the backbone of livestock enterprises.

The need is for projects which would provide storage facilities and the delivery of supplemental water to existing lands now suffering from late-season shortages, and of a full water supply to irrigable lands which are presently sagebrush and dry range.

The key to irrigation development in the Green River Basin is the Upper Colorado River storage project. The coordinated, basinwide development and use of water resources of the Upper Colorado River opens the door to development of participating projects in the Green River Basin—a door which has been closed heretofore because of the limitations in water users' ability to repay the costs of the irrigation works needed.

Under the storage project, as authorized in 1956, revenues from the sale of power produced at the storage unit dams, such as Flaming Gorge and Glen Canyon, will be utilized through the basin fund to assist farmers on participating projects in the repayment of irrigation construction costs. Power revenues will pay about 85 percent of the costs of participating-project irrigation facilities. With this vital financial assistance, expanded development and use of Wyoming's water resources in the Green River Basin will proceed.

Here is a brief inventory of the future projects in the Green River Basin under this program.

Seedskadee—an authorized participating project which would provide a full water supply for approximately 60,000 acres of new land along the Green River northwest of Green River and Rock Springs and east of Kemmerer. An initial construction fund of $1,320,150 was provided for this project by the Congress this year.

Lyman—an authorized participating project which would supply supplemental water for up to 40,000 acres.

LaBarge—an authorized participating project which would irrigate 8,000 acres of new land along the Green River north of the Seedskadee project and in the vicinity of LaBarge and Big Piney.

Sublette—a possible project which potentially could supply water to about 70,000 acres of new land and supplemental water to about 15,000 acres of land presently irrigated. It also has a small power potential. Feasibility studies which may lead to authorization as a participating project are underway.

Savory-Pot Hook—a project which straddles the Wyoming-Colorado line and would be served by the waters of the Little Snake River, a tributary of the Yampa River. If authorized as a participating project, supplemental water would be provided to about 10,000 acres and a full supply for about 6,000 acres in Wyoming. An additional 15,000 acres of new and supplemental land would be served in Colorado.

Construction of such irrigation developments will greatly expand agricultural activities in southwestern Wyoming, which urgently needs bolstering of its economy.

Just across the Wyoming-Utah State line, Flaming Gorge Dam is now being constructed on the Green River. The water of the 3,800,000 acre-foot reservoir will back into Wyoming nearly to the town of Green River, and the reservoir will lend itself to recreational development on a large scale.

In summary, possibilities for future large-scale irrigation projects are not promising on the eastern slope, but are good on the west slope. You will notice that I have repeatedly used the phrase "future large-scale irrigation projects." This is because the Bureau of Reclamation traditionally has been the developer of such projects. There might be, however, small projects throughout the State which can be helped by Reclamation's small projects program. The Wyoming Natural Resources Board also has its own program for financing the construction of small developments.

I want to emphasize that the section of the State containing arable lands and the most adequate water supplies is dependent for irrigation development on financial assistance from the Colorado River storage project's hydroelectric power system.

Passage of the Colorado River Storage Project Act was one of the most dynamic incidents affecting Wyoming's economy in all of its history. Without the upper basin fund, the full repayment of participating project costs as required by reclamation law would not be possible.

Upper basin power might have another great influence on Wyoming development. The interconnected Bureau of Reclamation power system that serves Wyoming, and private power—recently augmented by construction of the Dave Johnston powerplant of Pacific Power & Light Co.—are adequate to care for the State's immediate future. Nevertheless, the ultimate availability of storage project power will be an encouragement to industry to locate or expand within Wyoming's borders.

The demands of irrigation upon the unused portion of the water supply within the several basins will not be great, as I have indicated. Although this might seem like a negative viewpoint, it has its positive aspect—the water should be ample for urbanization and industrial growth.

Attachments include summaries of current construction, crop production, project investigations, and recreational use of Bureau reservoirs in Wyoming.

TABLE 1.—*Reclamation recreational areas and available public use facilities, 1958, Wyoming*

Project and name of lake, reservoir, or recreation area	Total area (acres)	Normal water surface (acres)	Elevation	Parking number car spaces	Toilet buildings	Tent spaces	Trailer spaces	Drinking water	Organized camps		Guest rental units	Cafes	Picnic shelters	Picnic tables	Picnic fireplaces	Boat launching ramps	Public boat docks	Swimming beaches	Bath or change houses	Rental boats
									Number	Capacity										
Eden: Big Sandy Reservoir	5,810	2,500	6,760	(1)	2															
Kendrick:																				
Alcova Reservoir	6,120	2,500	5,500	(1)	4	(1)	(1)													
Seminoe Reservoir	37,944	20,000	6,357	(1)	2					200		1		20	8	3	1	1	1	
Minidoka:															3					
Grassy Lake Reservoir	1,500	200	7,210	300				(2)												
Jackson Lake	30,000	25,000	6,769	2,000	6	100	50	(2)			150	5		50	10	3	3	3		3
Missouri River Basin:																				
Boysen Reservoir	42,366	19,660	4,725	500	6	(1)	(1)				6	2		20	8		1	1		9
Glendo Reservoir	24,036	12,000	4,635	(1)	2	(1)										2				
Keyhole Reservoir	14,324	9,418	4,099	100	4	10	10	(2)	1	40				20	8					
Kortes Reservoir	1,960	83	6,142	(1)	2	0		0						10	4					
North Platte:																				
Guernsey	9,200	2,350	4,420	(1)	6	(1)	(1)	(2)												
Pathfinder Reservoir	43,144	22,600	5,852	(1)									3	30	25	1		1		
Riverton:																				
Bull Lake	3,311	3,311	5,810	(1)																
Pilot Butte Reservoir	901	901	5,460	(1)																
Ocean Lake	9,888	6,248	5,225	(1)	2															
Shoshone: Buffalo Bill Reservoir	12,716	6,710	5,360	100	4	(1)	(1)			38		1	1	8	6	1	1	2		10

[1] Available but number not limited or defined.

[2] Potable drinking water available.

TABLE 2.—*Reclamation, recreational areas, attendance, administering agencies, and related data, 1958, Wyoming*

Project and name of lake, reservoir or recreation area	Total annual attendance	Peak day attendance	Total cars in area	Boat permits	Reported take			Administering agency	
					Sport fish	Ducks	Geese	Name	Address
Eden: Big Sandy Reservoir	7,230	420	4,000	------	13,080	200	10	Wyoming State Park Commission.	Boysen Route, Shoshoni, Wyo.
Kendrick:									
Alcova Reservoir	172,500	3,600	55,000	------	36,000	100	(1)	------do------	Do.
Seminoe Reservoir	17,000	400	4,800	------	3,600	100	(1)	------do------	Do.
Minidoka:									
Grassy Lake Reservoir	1,500	75	420	------	1,500	15	1	Bureau of Reclamation	Burley, Idaho.
Jackson Lake	542,091	10,000	133,030	------	42,200	(1)	(1)	National Park Service	Moose, Wyoming.
Missouri River Basin:									
Boysen Reservoir	10,000	200	70	------	10,000	200	20	Wyoming State Parks Commission.	Boysen Route, Shoshoni, Wyo.
Glendo Reservoir	12,000	500	3,425	------	3,600	100	3	------do------	Do.
Keyhole Reservoir [2]								------do------	Do.
Kortes Reservoir	1,500	45	430	------	320	(1)	(1)	Bureau of Reclamation	Box 280, Casper, Wyo.
North Platte:									
Guernsey Reservoir	36,000	640	14,000	------	(1)	500	5	Wyoming State Park Commission.	Boysen Route, Shoshoni, Wyo.
Pathfinder Reservoir	8,300	750	2,340	------	1,000	(1)	(1)	Bureau of Reclamation	Box 280, Casper, Wyo.
Riverton:									
Bull Lake [2]						(1)	(1)	Bureau of Indian Affairs	Fort Washakie, Wyo.
Pilot Butte Reservoir [2]						(1)	(1)	Bureau of Reclamation	Riverton, Wyo.
Ocean Lake					78,000	(1)	(1)	Wyoming Game and Fish Commission.	Cheyenne, Wyo.
Shoshone: Buffalo Bill Reservoir	14,850	900	300	------	6,000	100	(1)	Wyoming State Park Commission.	Boysen Route, Shoshoni, Wyo.

[1] Information not readily available

[2] Not reported.

Investigation Activities in Wyoming

GENERAL INVESTIGATIONS

Bonneville Basin, Wyoming-Utah-Idaho

A report covering the Bonneville Basin was completed in 1949 and the only activity underway at the present time is the Federal participation in the work of the Bear River Compact Commission which requires a small amount of funds each year.

Columbia River Basin, Wyoming-Montana-Idaho-Oregon-Washington

This basin study covers the Bureau of Reclamation's continuing activities in connection with the comprehensive plan for development of the entire Columbia River Basin embracing some 259,000 square miles of lands in the Columbia River Basin States. These activities include the Bureau of Reclamation's responsibilities under the Interior-Army agreement of April 1, 1949, on the comprehensive development of the basin, participation in the coordination, and planning of the Columbia Basin Inter-Agency Committee and other inter-agency groups, the coordinated operation of the several multipurpose projects in various parts of the basin, and, in general, continued collaboration with States and other agencies where comprehensive natural resources planning and development in the Columbia River Basin are of concern.

Fontenelle project

A reconnaissance report was completed in fiscal year 1959 on this project to determine whether or not more detailed feasibility studies are warranted of a potential plan for providing storage on Fontenelle Creek, a tributary of the Green River in southwestern Wyoming, to supply new and supplemental water to some 5,800 acres of land. That report is now under review and the scheduling of feasibility studies is dependent upon the results of that review.

Savory-Pot Hook project, Wyoming-Colorado

The purpose of this investigation is to determine the feasibility of controlling the surplus flows of Savory and Slater Creeks to provide irrigation water for some 35,000 acres of new and inadequately irrigated land located between the town of Slater, in northwestern Colorado, and the town of Baggs, in south-central Wyoming. A feasibility report on this investigation has been completed and submitted to the Commissioners' office.

Snake-Narrows project, Wyoming-Idaho

The purpose of this investigation is to develop a plan for multiple-purpose storage and regulation on the headwaters of the Upper Snake River which will provide a needed holdover storage for irrigation, power generation and flood control. Irrigation in the Upper and Middle Snake River Basin is highly developed at the present time and the only way in which additional water can be obtained to meet the serious shortages is through the construction of holdover storage capacity on the headwaters. Studies to date indicate that the Alpine Dam and Reservoir located on the Snake River just above the mouth of the Greys River in Wyoming appears to be the most suitable site for that purpose. Field studies are essentially complete and a feasibility report is scheduled to be prepared in fiscal year 1960.

Sublette project, Buckskin division

This investigation is being made to determine the feasibility of constructing three dams and reservoirs and a system of canals and laterals to provide irrigation water to 37,400 acres of new land and 10,500 acres of land now receiving an inadequate water supply. The project area is located in Sublette County in southwestern Wyoming. A feasibility report is to be completed by the end of fiscal year 1963.

Upper and Middle Snake River Basin, Wyoming-Oregon-Idaho

The Upper and Middle Snake River Basin includes that part of the Upper Snake River drainage area upstream from and including the Powder River. A basin-type investigation is currently underway to determine the amount and distribution of the available water supply and location of land suitable for irrigation, and to establish the framework of a comprehensive plan for the basin that would serve as a guide for more detailed studies of specific developments within the basin. A report on this investigation is scheduled to be completed by the end of this fiscal year.

Upper Colorado River Basin, Wyoming-Arizona-Colorado-New Mexico-Utah

This basin extends from the headwaters of the Colorado River in Colorado and Wyoming to Lee Ferry in northern Arizona. This investigation culminated in a basin report on the Upper Colorado River Basin in 1946. Since that time a small amount of funds has been required for expenses of the Federal representative on the Upper Colorado River Compact Commission and for studies of a general nature such as quality of water measurements and analyses, sedimentation studies, etc.

Woodruff-Cokeville project, Wyoming-Utah

A feasibility study is now underway of the possibility of constructing the Woodruff Narrows Dam and Reservoir on the Bear River near Woodruff, Utah, to provide a supplemental water supply for some 44,000 acres near Woodruff and Cokeville, Wyo. A report on this study is scheduled to be completed by the end of 1960.

COLORADO RIVER STORAGE PROJECT ADVANCE PLANNING

La Barge project

This project is located in southwestern Wyoming near the town of La Barge. It will provide for the irrigation of 7,970 acres of desert land by diversion from the Green River. Detailed preconstruction studies are underway which are expected to culminate in a definite plan report in fiscal year 1961.

Lyman project

The purpose of this project is to provide a supplemental water supply for some 39,700 acres of land near the town of Lyman, in southwestern Wyoming, which suffer from late season shortages. Detailed planning prerequisite to start of construction is now underway and should be completed in fiscal year 1962.

Seedskadee project

This project is located along the Green River near the town of Green River in southwestern Wyoming. Excess spring flows of the Green River, a tributary of the Colorado River will be stored in the proposed Fontenelle Reservoir for the irrigation of 58,775 acres of new land in Lincoln and Sweetwater Counties. The definite plan report was completed in fiscal year 1959 and the 1960 Public Works Appropriation Act provided funds for start of construction.

MISSOURI RIVER BASIN PROJECT INVESTIGATIONS

Bighorn Basin division

Field work has been completed on a comprehensive study of the water resources of the Bighorn River Basin. It appears that some 50,000 acres of new land can be developed and 60,000 acres of irrigated land can be provided supplemental water in the basin. The report on this division is expected to be completed as soon as funds can be made available for that purpose.

Clarks Fork Division

A draft of a report on potential development of the Clarks Fork River has been submitted to Washington and returned to the field for further consideration. We do not anticipate immediate revision and release of the report. Although the irrigation potential in this river basin is very limited, there are possibilities for a substantial power development involving four dams and powerplants.

Gray Reef Dam

This dam was authorized as an additional feature of the Glendo unit in the 85th Congress subject to submission of a feasibility report to the Congress before construction is undertaken. The report necessary to establish feasibility as part of the Glendo unit has been approved by the Congress and construction will be started shortly. The dam will be located on the North Platte River downstream from Alcova Dam, and will reregulate power and irrigation releases so that the system above that point may be operated most effectively without extreme fluctuations of streamflow in the reach between Alcova and Glendo Dams.

Niobrara River Basin, Wyoming-Nebraska

A comprehensive plan for development of the water resources of the Niobrara River and its tributaries was developed in 1953. In 1954 the Congress authorized construction of four units, Ainsworth, O'Neill, Lavaca Flats and Mirage Flats

Extension, subject to approval of feasibility reports. Subsequent work on the basin plan has been devoted to keeping the data current and assisting in the negotiation of an interstate river basin compact.

North Platte River Basin, Wyoming-Colorado-Nebraska

An inventory report, pointing out potential projects and problems of water resources development in the North Platte River Basin was completed in 1957. Subsequent activities have been devoted to keeping the data current and extending studies to other promising potentialities. No projects for expansion of the presently irrigated area were recommended.

Shoshone extensions unit

This project is designed to utilize water supply and capacity in Buffalo Bill reservoir and the Shoshone Conduit which is in excess of present project needs, to develop new lands and to provide supplemental water to presently irrigated lands in two areas adjacent to the existing Shoshone Project. A special report on the south side area is complete, and is being used for public information. The State, in recognition of opposition to the project on the presently developed areas, has undertaken some related studies and has requested the Bureau to defer further activities until those studies are completed.

South Platte River Basin, Wyoming-Colorado-Nebraska

Present activities in the South Platte River Basin are directed toward completing an inventory report on existing, proposed and potential water resources projects in the basin to form the basis for coordinating future project proposals. This work has been under way for several years and the report is being prepared in the field. It is expected to be submitted to Washington in 1959.

Transmountain diversion division

These studies are devoted to determining which of several plans offers the best possibilities for transporting Colorado River water to the North Platte River Basin. The reconnaissance studies were completed recently and a report was sent to the State. Related studies under the title Little Snake-North Platte Diversion were also reported upon. Activities will be discontinued pending further study of potential water use areas and further advice from the State.

Wheatland unit

This investigation is designed to develop methods of relieving irrigation water shortages on the existing Wheatland project area in the Laramie River Basin. A reconnaissance report issued in 1958 pointed out several methods of water salvage and more efficient regulation and use of supplies which could relieve the problem. Detailed studies of those methods, to culminate in a feasibility report in about 2 years, were started in fiscal year 1959.

TABLE 1.—*Bureau of Reclamation, projects under construction in fiscal year 1960 in the State of Wyoming*

	Total estimated obligations	Obligations to June 30, 1959	Proposed program fiscal year 1960	Estimated date of functional completion
Wholly within State:				
Eden	$8,202,132	$7,963,808	$166,121	(2)
Riverton	28,713,795	22,024,340	278,455	1965
Riverton rehabilitation and betterment	4,448,355	3,132,859	408,496	1961
Shoshone	24,404,781	23,186,206	172,575	1963
Missouri River Basin:				
Boysen unit	33,827,679	33,812,079	15,600	(2)
Glendo unit	44,909,628	40,971,859	3,114,281	1961
Hanover-Bluff unit	3,408,034	2,650,113	261,921	1962
Owl Creek unit	5,377,761	3,922,686	1,000,075	1961
Colorado River storage participating project: Seedskadee	36,808,367		1,320,150	(4)
Subtotal	190,100,532	137,663,950	6,737,674	
Partly within State: [1]				
Colorado River storage:				
Flaming Gorge unit, Utah-Wyoming	66,447,000	16,105,662	12,897,673	1964
Transmission division	157,345,000	334,737	[3] 764,267	(4)
Missouri River Basin: Transmission Division	317,817,427	117,744,051	[3] 15,273,277	(4)
North Platte rehabilitation and betterment, Nebraska-Wyoming	5,728,492	3,937,242	387,451	1964
Palisades, Idaho-Wyoming	61,679,418	61,263,944	200,474	(2)
Subtotal	609,017,337	199,385,636	29,523,142	
Total	799,117,869	337,049,586	36,260,816	

[1] Where project is in more than 1 State, entire cost of project and program is shown.
[2] Completed. Minor work remaining.
[3] Proposed program for fiscal year 1960 is for preconstruction type activities.
[4] After 1966.
[5] Excludes Fort Randall-Nebraska State line transmission line currently under construction by others.

TABLE 2.—*Federal reclamation projects in Wyoming, 1958*

Project	Irrigable acreage for service	Irrigated acreage	Gross crop value	Cumulative gross value
Eden	12,903	11,629	$330,793	$1,328,698
Kendrick	23,957	18,168	514,410	4,312,634
Missouri River Basin:				
Bighorn Basin division:				
Hanover-Bluff unit	6,939	3,905	294,583	441,924
Owl Creek unit	11,338	8,656	286,177	726,537
Oregon Trail division:				
Glendo unit:				
Burbank Ditch Co	331	311	10,113	10,113
Lucerne Canal and Power Co	4,431	3,927	229,575	229,575
New Grattan Ditch Co	1,323	1,243	86,609	86,609
Torrington Irrigation District	2,447	1,875	77,917	77,917
Wright and Murphy Ditch Co	200	200	8,143	8,143
Total, Glendo unit	8,732	7,556	412,357	412,357
North Platte:				
Goshen Irrigation District	52,484	49,889	3,990,257	76,594,439
Pathfinder Irrigation District	2,268	1,968	118,944	118,944
Special and Warren Act contractors:				
Lingle Water Users and Hill District	15,367	14,060	823,688	28,259,166
Rock Ranch Ditch Co	950	950	55,478	
Total, North Platte	71,069	66,867	4,988,367	104,972,549
Riverton	52,945	49,455	1,956,766	39,667,977
Shoshone	93,431	76,039	4,407,228	91,736,639
Total	281,314	242,275	13,190,681	243,599,315

Senator MCGEE. The next witness is Mr. Frank Mockler, Senator Mockler, from Dubois.

STATEMENT OF FRANK MOCKLER, PRESIDENT, WYOMING STOCK GROWERS ASSOCIATION

Mr. MOCKLER. My name is Frank Mockler from near Dubois, in northwest Wyoming. I have lived there almost 30 years on an irrigated ranch. I am a user of the forest reserve lands and also some Taylor grazing lands. I am the president of the Wyoming Stock Growers Association, a nonpartisan organization, founded 87 years ago, to represent the cattlemen of this State. Over the years, our association has played a leading role in the social, economic, and political life of Wyoming, and I am here today as a representative of that organization.

As landowners, we are vitally interested in water resources. We want to assure this committee that we appreciate their interest, and the interest of Congress, in a problem so close to those of us who are directly dependent upon water for a livelihood. We believe that long-range planning is needed. We believe that this committee is in a position to make a tremendous contribution to the welfare of this State and to the Nation and welcome this opportunity to make recommendations to you.

Although it is our understanding that you are not to consider any pending legislation, I do want to bring forth a point which we consider of tremendous importance here in Wyoming. That is, that we do not seek and will resist Federal control over our national resources. One of the greatest services this committee would render would be to define the scope of the duties and obligations which the Federal Government should assume in the control and development of water. With so much of our land and resources now under absolute Federal control, I feel sure the committee can understand our great reluctance to surrender a resource, such as water, so vital to us.

Here in the West, we have always felt—and rightly so, I think—that the control and development of water within the boundaries of a State were a problem of the individual State. The Wyoming Constitution in article 8, paragraph I, states, and I quote:

> The water of all natural streams, springs, lakes, or other collections of still water, within the boundaries of the State, are hereby declared to be the property of the State.

The act of admission ratified this constitution, and we feel that the Federal Government should now honor that ratification. We have set up a system of priority, based on beneficial use, that has stood the test of time and has resulted in an orderly and fair development of our arid lands.

The Federal Government should not assume the sole responsibility for the conservation, development and control of the waters of the United States. We believe that whenever possible, private initiative and local governmental units should function, and only when action for the whole Nation is necessary and the lower echelons are unable to cope with the problem, should Federal dominion be exercised.

Perhaps many members of the committee came to this meeting by air. If so, you must have noticed thousands of small ponds and reservoirs scattered over the lands below. Even 10 years ago there was practically no water storage at all there. I point this out to show

that we are progressing rapidly here. Individual landowners have made tremendous strides in holding back runoff, in making grazing land more productive by building reservoirs in areas formerly too far distant from water for use by grazing animals, and by spreading waters over grasslands adjacent to what used to be roaring gulches.

The legislature of our State has been aware of the importance of water; we have done something about it. I would point out to the committee the creation of the natural resource board, whose members are here today and who are fulfilling excellently the functions that the legislature conceived when the board was created; that is, to develop the natural resources of Wyoming. We have entered into interstate compacts, approved by Congress, to bring about joint action with other States in resolving our mutual water problems. We have also set up special funds to loan moneys for construction of small reservoirs in order to insure all possible participation by local landowners. We have special laws for the creation of irrigation and drainage districts. The point I am trying to make is that Wyoming is constantly working toward better conservation and use of our water. If we were not doing so, then perhaps those who advocate Federal control, in an unlimited degree, might have some justification for their arguments. On lands under Federal jurisdiction such as National Forests, Indian Reservations, and lands administered by the Bureau of Land Management, the Federal Government should continue to exercise jurisdiction for watershed protection but we do not concede that waters originating thereon are Federal waters.

There is one point that should be brought forth to this committee, because it is often misunderstood, that is the attitude of the landowner toward the recreation and wildlife interests. The stockmen recognize fully that these interests must be considered along with other uses of our lands and our resources. I sincerely believe that the relationship between the landowners and the various sportsmen groups here in this State is the best it has been for a long time. This committee should proceed with care, and not upset that good relationship by actions which might be considered as unfavorable by one group or another.

In conclusion, I would like to sum up our position thusly. We want to cooperate in every way, we feel the committee should recognize State water laws and State problems and that in setting forth some program as to the scope of Federal participation that these State water laws be fully recognized. Our State has come a long way in the development of water, there is more to be done and along that line we feel that the Federal Government can assist us through mutual agreement.

Gentlemen, I would like to interpolate and give a personal opinion, not necessarily the opinion of our organization, because we haven't had an opportunity to pass on it and I personally would like to support the Forest Service in their 10-year plan that they have advocated. We had at one time a very trying period in the West with the Forest Service over grazing matters. We have worked our way out of that pretty well. My only regret is that the 10-year program was not in force and in effect beginning 20 years ago. And much of the difficulty that has arisen could have been eliminated, I feel sure. I think that that is a sound, a progressive and a forward-looking program and

should have been initiated a long time ago. If you gentlemen can, I would like to see you do what you can to support the Forest Service in their proposed 10-year program.

The committee's task is tremendous, but we are confident that the committee will fulfill its duties fairly and efficiently so that all concerned may applaud your actions.

Thank you.

The CHAIRMAN. Thank you, Senator Mockler.

Any questions here?

Senator KUCHEL. I would like to ask one question.

You speak of the small ponds and reservoirs that have been constructed in Wyoming. Is that the result of individual action or by State programs or the Soil Conservation Service?

Mr. MOCKLER. They are a combination of effort, Senator. I think it would be safe to say that. Most of them have been built by the landowner through the cooperation of the Soil Conservation Service, which furnishes the engineering and other facilities for that purpose. But it is a cooperative effort and has paid off for us here.

I think you gentlemen must have noticed the hundreds of those reservoirs and water checks that have been built in this State and throughout the West, not just here in Wyoming but all through the West.

Senator KUCHEL. All over the Nation, practically.

Mr. MOCKLER. Yes; I suppose yes.

Senator KUCHEL. Let me just ask, did you indicate that the State of Wyoming has a Small Projects Act under which conservancy districts may borrow interest free to make certain improvements?

Mr. MOCKLER. We have an act where private individuals may borrow, small organizations may borrow, not interest free, but at a low rate of interest.

Senator KUCHEL. How much is the ceiling of the amount of money that can be borrowed?

Mr. MOCKLER. I will have to ask someone else that. But my recollection is that it is $60,000.

Senator KUCHEL. What is the purpose of the act?

Mr. MOCKLER. To encourage local people, local groups of irrigators, for instance, or users to go ahead and do the work.

Senator YOUNG. May I ask this additional question? How many watershed projects do you have in Wyoming presently?

Mr. MOCKLER. In the Soil Conservation Service, sir?

Senator YOUNG. Yes; under SCS. I am speaking of the watershed projects in the upper reaches of the river.

Mr. MOCKLER. I cannot answer that. I think that perhaps some of the Soil Conservation people who are here could answer that. I am not familiar enough with that particular branch of the Government to know. It is not under State jurisdiction. Perhaps Orr Garber could tell us.

Mr. GARBER. One was completed over here at Fort Laramie and it is not really what we consider a downstream project. We have not had too much success with 566 on upstream development. It just appears where you have public lands. You just haven't got votes to promote the necessities of the watershed.

Senator McGee. May I say nothing could have better epitomized, Senator, the stockman-sportsman cooperation in the potholes on your place where Franklin, Junior, and I got a beautiful mess of greenhead mallards one day.

Mr. Mockler. Well, thank you.

Senator McGee. Mr. Bryan Patrick, Wyoming Stock Growers.

STATEMENT OF BRYAN PATRICK, WYOMING STOCK GROWERS

Mr. Patrick. Senator McGee, distinguished members of your committee, I am Bryan Patrick. My entire life has been spent in the ranching business here in Wyoming.

I am a past president of the Wyoming Stock Growers Association.

I wish to thank the members of this committee for the opportunity afforded the State of Wyoming and her citizens to testify regarding this most important national resource and we feel that this is the one resource of many in Wyoming in which we have some rights.

From Wyoming springs the headwaters of many of the great rivers of this Nation, water running north, east, south and west.

The ingenuity of man has developed substitutes or improvements for many things, but nothing to take the place of water. No other one resource has the diversity of uses nor does any one other substance, unless it be air, spell health, or life, or death, for so many things.

From an economic standpoint the desalinization of seawater will be of little service to the great interior portions of this Nation and especially to the mountainous areas where most of our mineral and agricultural resources are, and where some of the increase in population will subsequently occur.

Great quantities of water are needed in the processing of crude products, which should be done as near as possible to the point of origin in the interest of economy and to lighten the burden on transportation with its tremendous cost to the Nation and which is rapidly becoming a national, serious national problem.

Looking forward to 1980 or 1975, or even sooner, good judgment will dictate that studies and plans should start where the water starts. Adequate storage to stretch out heavy runoff, to retain for use later, and to reduce flood damage. Proper use and reuse, down the already established courses of our streams, with positive measures for noncontamination, and with due regard for established State and private rights.

The allocation of waters should be carefully studied to obtain the maximum beneficial usage from our streams and the development of underground water should be carefully allocated and controlled to prevent impairment of the surface water supply.

Without proper planning at this time, the next generation may well be faced with undoing or rebuilding expensive and insufficient projects, as has occurred in other Federal programs.

Water, like so many other things in this fabulous Nation was supplied to us in great abundance and furnished at its source at no cost. Its careful use and allocation is the problem of us here now.

Gentlemen, I thank you.

Senator McGee. Thank you very much, Mr. Patrick.

Are there any questions from the committee?

Mr. PATRICK. I have avoided technicalities. I am sure you will be furnished all of the technical information regarding this.

Senator MCGEE. Thank you very much.

Now, Mr. Dudley D. Miles, county attorney, Carbon County, Wyo.

STATEMENT OF DUDLEY D. MILES, COUNTY ATTORNEY, CARBON COUNTY, WYO.

Mr. MILES. Mr. Chairman, Senator McGee, Senator Young, much of the prepared statement which I will submit to the committee deals with the many general problems involving what has been discussed here quite thoroughly today. I think it has been pretty clearly and ably established that we must direct considerable attention to this water problem in the near future if we are to make any attempt at solving it. Due to the time factor I am going to pass over completely that portion of my prepared statement.

I would like, however, to take just a very brief moment and make reference to one element that I don't think has been developed enough here today and that is the time element which we are now facing.

The statement has been made here from this desk several times that water is Wyoming's most important resource. I don't think any of us will have any particular quarrel with that statement generally. I do believe, however, that we can all agree on one further statement, and that is that time, like water, is another element at our command that we can ill afford to waste at this time.

Time also, again, comparing it to water, is another factor or resource that once we have wasted it, it is wasted forever and is never subject to be recovered or recalled.

I think the distinguished college of gentlemen, the distinguished Senator from Montana, Senator Murray, in a speech on the floor of the Senate this past summer, brought this out very forcefully and very clearly when he made the following statement in discussing national resource problems.

He stated:

> The administration's policy of no new starts represents lost income and lost production and most serious of all, it represents lost time and lost opportunities that may never be regained.

Now, from a study of the various reports to which Senator Kerr referred that have been prepared by the Department of Commerce and from the brief look at the Federal budget, it appears that the Federal Government is now appropriating and making available for this purpose less than one-third of the financial requirement that has been estimated to be required if we are to take care of this problem in the next 15 to 20 years.

Now, it appears to me and I submit to you gentlemen, that if we are to keep faith and perform our duties to the future generations who will follow us, then we must face up to the challenge to us today and we must have the courage of our convictions to make available whatever funds are necessary to meet these challenges which are so clearly before us today.

That is the conclusion of my statement in view of the time.

Senator YOUNG. Mr. Chairman, I feel constrained to make this statement. I don't think it is true to say that the administration is against any new starts. In fact, there were quite a few new starts in the Bureau of the Budget recommendation. It is true that the administration was opposed to a great many of the new starts that were a part of the public works appropriations bill. But they have been for a great many new starts.

Mr. MILES. Senator Young, the reference I made to the no new starts was the quotation from Senator Murray's speech on the floor of the Senate.

Senator YOUNG. Yes. I voted to override the President's veto on the public works bill that had nearly 100 new starts in it. But I do believe it is unfair to say that the administration is opposed to any new starts because many of them were contained in that request.

Senator MCGEE. Do you have any questions?

The CHAIRMAN. No questions.

Senator MCGEE. Thank you very much, Mr. Miles.

Mr. MILES. Thank you, Senator.

(The prepared statement follows:)

STATEMENT OF DUDLEY D. MILES, COUNTY ATTORNEY, CARBON COUNTY, WYO.

The problems involving water and water supply have always been of paramount interest and importance to the people of the State of Wyoming and the Rocky Mountain West generally. History as well as Hollywood and, more recently, television, remind us of the struggles which have been waged for control of, or even temporary access, to that priceless commodity. Our early settlers soon discovered that water was necessary to the development of the new and vast frontier. The individual who owned, or controlled, the water hole, controlled the entire area.

In those days and down through the years, the water problem has been identified as one primarily involving the semi-arid States of the West. It was considered a problem of the West and, perhaps to some degree at least, properly so. Indeed, it was the major obstacle confronting the development of this area. Most attention directed to water resources and its development to date has been aimed primarily at solving the water problems of the West—to put the non-productive semi-arid lands under irrigation, cultivation and production. The reclamation projects in this area were developed primarily with that aim in mind, together with the flood control and generation of electrical power. These several reclamation projects have served a very necessary and useful purpose. The motivating factor behind them and their purposes were probably satisfactory for the most part in their own day. As in any other phase of our life today, however, we cannot and must not allow our thinking and actions to be controlled solely by our activity in the past. We must gear our thoughts to the situations confronting us today and the problems which we can, with reasonable certainty, anticipate in the foreseeable future. These problems must be met with positive, straightforward and affirmative thinking if they are to be solved satisfactorily.

First, we must all realize that the water problem is no longer limited in the Rocky Mountain West and is no longer one that should be considered particular to this area. It has become one certainly national, and quite possibly international in its scope and ramifications. How we handle the water that today flows from Wyoming, Montana and other Western States down to the ocean affects not only the people in these States but will have appreciable impact on the economic picture of the United States. It will also, as will be discussed later, assume some significance in the picture of national security.

In evaluating the domestic economic picture insofar as it will be affected by water development, we know that we must look forward to a population in the United States of something over 200 million people by 1975. By the year 2000, we must look forward to at least 300 million. From reliable figures available to us today, it appears that the farm surplus problem now confronting us will be converted to one of scarcity in the future unless some definite forward-looking

action is now taken to prevent it. Certainly, one phase of the water problem confronting us today is to assure that there will be adequate land and acreage under cultivation serviced by adequate water facilities to provide the food products necessary to sustain this anticipated increase in population and to maintain or improve our standard of living.

This anticipated increase in population assumes added significance when we stop to consider that our economy must expand its entire base if there are to be job opportunities for the increase. In order to absorb this added population and to fit it in the scheme of our economic picture, more jobs must be created; otherwise our standard of living must of necessity decline. For example, if Wyoming is to absorb its share of the population increase, its water resources, along with the several other natural resources within its borders, must now be developed to the point at which they will provide jobs necessary to maintain these added individuals. To absorb this added increase, it is evident that Wyoming and the Rocky Mountain West must be in a position to attract and sustain industries. To do so, will have a two-fold effect. That will inure to the benefit of the State and its people directly. It will attract new people to an area which will be capable of absorbing them and utilizing them to the advantage of all concerned.

Secondly, the location of major industry in the area would be in the best interests of the national defense picture. It has been generally established that under existing circumstances, a few well-placed nuclear missiles directed on our major concentrated industrial centers in the East could produce a paralyzing effect on the production capacity of the country. The only real protection against this tragedy is to decentralize our industries and redistribute them to the other areas, including the vast areas of the Rocky Mountain West. This will not only aid the West and the Nation economically, but it would also be a major contribution to the defense effort by having our major industries less vulnerable to attack.

Much more time and space could be devoted to enlarging upon the water problems facing us. I feel, however, that the problems must be more than evident to every thinking American without further explanation or elaboration upon it. Of more interest and perhaps more importance is the solution, or attempted solution, to this problem.

We must, if we hope to even keep abreast to the natural resource problem including water, plan now on a long-term basis. We must now set our long-term goals, determine our long-term needs and then proceed to plan and finance them accordingly. A great amount of work has already been devoted to study to assist us in formulating our policies. We have only to look and heed the warnings—the information is clearly before us. A report of Walter L. Picton of the U.S. Department of Commerce published in June of this year estimates that $171 billion must be invested between now and 1975 in order to provide adequate water and related facilities to keep abreast with the increasing need and demand. The same Department of Commerce reports indicate that Federal expenditures of $50 billion on water resources will be required in the next 15 years.

It must be obvious that even if we are to approach these requirements and goals, we must start now and continue to increase our planned and present development and expenditures through the years. It would be sheer folly to ignore or minimize this situation further and then be required to meet the problem several years from now on an emergency and crash basis.

The developments of the magnitude of which we speak cannot be accomplished overnight. They take time and time is the one commodity which we cannot afford to waste. It is one priceless and precious commodity which, when wasted, is lost to use forever, never to be reclaimed. The distinguished Senator from our neighboring State of Montana, Senator James E. Murray, long honored and recognized as one of the champions of the water resource problem and a gentlemen who with our Senator O'Mahoney has led a long and determined battle to foster, protect and encourage interest and development in natural resources, discussed this problem on the floor of the U.S. Senate on August 19, 1959. He said in reference to the time element "The administration's policy of 'no new starts' represents lost income and lost production more serious of all it represents lost time and lost opportunities that may never be regained."

Recognizing these basic facts, as I am sure we all do, the policy of the present national administration of "no new starts" to which Senator Murray made reference becomes even more alarming. Despite the Department of Commerce reports of $50 billion of Federal expenditures being required in the next 15 years,

present schedules call for spending something slightly over $1 billion the next year. This is less than one-third of the amount required to even keep abreast of the water problem. If this condition is permitted to remain and continue, it is evident that the problem, now important, may well become critical or even insurmountable in the future.

Much has been said and written about the obligations which our present generation owes to those who will follow us. I submit that we have no greater duty or responsibility to these future generations than that of insuring that our natural resources are left and passed on to them in as good a condition as possible. If we shirk this responsibility—if we fail to face up to this duty and obligation—if we continue to make available only one-third of the moneys required to keep pace, then we indeed are not keeping faith with our children, grandchildren and other generations who will follows. This is our only real heritage which we can leave to posterity with any sense of pride or accomplishment.

Under the guise of economy the present national administration has failed, and is now failing, in its obligations to the unborn generations yet to come. In its policy of "no new starts" and in its policy of drastic restricting the budget along this line, the administration is ignoring the warnings which have been presented by its own factfinding committee. The result is that not only will our natural resources program be hampered and curtailed to the extent that their future usefulness will be impaired but also and at the same time, these policies have the effect of restricting and slowing down our national rate of economic growth. As discussed above, this economic growth is an absolute necessity if we are to maintain our standard of living. It is the duty of the administration to see to it that the country maintains itself in this particular field of natural resources and it must have the integrity and courage to see to it that whatever funds are necessary for this purpose and need are available and utilized. This in fact is not an expenditure of public funds nor an expense of operating government. In the final analysis this is simply an investment, an investment in the future of our country, and an investment that most assuredly will be repaid several times over in years to come.

Senator McGee. The next witness is Mr. Robert Martin, Rocky Mountain Oil & Gas Association.

STATEMENT OF ROBERT MARTIN, ROCKY MOUNTAIN OIL & GAS ASSOCIATION

Mr. Martin. Senator Young, Mr. Chairman, and Senator McGee in view of the lack of time may I introduce myself as Robert Martin. I live in Casper, Wyo. I am manager of the Central Division of the Rocky Mountain Oil & Gas Association, an association of those engaged in the oil business and the gas business in the States of Wyoming, Colorado, Montana, Nebraska, North Dakota, South Dakota and Utah.

The Central Division embraces the States of Wyoming, and South Dakota and includes more than 550 member companies, integrated oil companies, independent producers and small operators.

In all our association consists of more than 2,000 members throughout the seven-State area.

I have no prepared statement today. A regional statement by the Rocky Mountain Oil & Gas Association I think will be presented to the committee at the Billings hearing. But I would like to highlight a few of the things you will hear, perhaps impose them on the State of Wyoming, if I may be indulged.

An industry speaking today, I think that I am the second industry that has spoken before the committee, and I hope that you gentlemen from out of the State are aware that we have other industries besides the hearing groups.

We appreciate the opportunity to present an outline of our position and to impress upon this committee the importance of the industry to the State of Wyoming and to the States which you gentlemen represent.

You well know that water is as necessary to the production of oil and gas as it is to the growth of livestock and the growth of crops. We are large consumers of water, water which we must find easily available if we are to survive. A natural consequence for insurance of our oil production is the necessity for secondary recovery programs to assure the greatest possible production from each field discovery.

Water flooding of these underground reservoirs is one of the most productive of these secondary recovery programs and as a result readily accessible water supplies are necessary if we are to produce oil and gas in compliance with the established laws concerning waste and conservation.

In addition, not one facet of our industry, not one exploration, not drilling and not even refining can operate without ready water supply. You probably realized that through royalty payments to the Federal Government the oil industry in the public lands States has more than paid for a share of the available water because since 1920, tens of millions of dollars have been made available from the royalties to the Reclamation Service.

I might say that if the Congress of the United States would in its infinite wisdom allow the public lands States a little more or a little greater share of that royalty, I am sure that Wyoming at least would then have the money to go with its natural brains to make this State an Eden which no one would want to leave.

As a fourth priority water user in the State of Wyoming we do not ask for any greater consideration for our industry. We ask only that the committee be aware that the health of the oil industry is not only important to national security, but it is of prime importance to the State of Wyoming.

We thank you for the opportunity to briefly present our position and allow me to say that we are vitally concerned in your work.

Thank you, Senator.

Senator McGee. Thank you very much, Mr. Martin.

Are there any questions from the committee?

The next witness is Mr. John Barnard, who is speaking in behalf of the Colorado Water Congress at the request of Senator Carroll.

STATEMENT OF JOHN BARNARD, REPRESENTING COLORADO WATER CONGRESS

Mr. Barnard. Mr. Chairman, Senator McGee, Senator Young, I appreciate very much the opportunity to make a brief statement to the committee today and will brief it, rather than the longer statement that I did prepare for the committee.

Very briefly, again, I want to address myself not to the problem solely of Federal project construction but to certain policy questions concerning the place of the Federal Government in the water development.

I might add, in addition, to my work with the Water Congress, I am first assistant attorney general of Colorado and represent our water administrator in that capacity.

The reason I want to address myself to that is that in my opinion and in the opinion of the Water Congress, much review is needed of certain basic policies of the Federal Government in respect to water development. We need much detailed investigation of potential activities of the Federal Government in order to permit us to make complete development of our water. It is not just what we need that must be considered but what can be done. We know quite a little of what we need in Colorado and we know a little of what can be done in the near future by way of Federal project construction but what we don't know is how and by whom the total job can and will be done. In order to know that we will have to know before too long the basic policies and standards that are going to be applied to water development in the various States.

In the first place, as has been mentioned before, we feel that there needs to be some consistency in the degree of Federal responsibility in respect to various types of projects. That is consistency as to what amounts must be repaid if direct repayment is to be required, of some who benefit economically. We feel consideration should be given to repayment by others who benefit economically.

We feel there should be consistency in the matter of interest rates which is before the Congress at the present time, I understand, in respect to certain projects and we must ask the question of why certain projects should suffer the consequence of fiscal manipulation for other purposes, perhaps well justified. We don't understand why our project should suffer the consequences of that manipulation while others do not. I refer to the interest rates that vary between the upper storage Colorado interest rates and interest rates applicable under the Water Supply Act of 1958.

We think there should be a logical review of the existing standards for reclamation projects such as the land limitation provision which was considered before. We failed to understand. With the history we had we found that this national rate does not apply in many cases, that the standard has to be one of a reasonable economical family unit rather than a flat 160 acres. Having learned that we think perhaps basic legislation should establish that as a standard rather than a flat limitation and avoid the recurring problem of land limitations on every project that comes before the Congress.

Senator YOUNG. You believe, then, rather than have a 160-acre limitation that that limitation should vary with the region?

Mr. BARNARD. Yes, sir. Vary with the circumstances, what types of crops can be produced and how much land is necessary in order to support a family-size farm or ranch. This variance has been made in various projects but the basic reclamation law still contains the 160-acre land limitation.

Senator YOUNG. I agree with your position.

Mr. BARNARD. Thank you, sir.

Next, we feel that there is a greater responsibility to the Federal Government in one respect and that is the coordination and carrying on of a basic water research.

I fear as we go into more detail in the written statement that there is overlapping and duplication which could be avoided by a greater Federal support and participation in basic research programs. The State of Colorado has some of those programs. I might say in this respect the U.S. Geological Survey in Colorado has done a very fine job of cooperating with the Colorado Water Conservation Board in respect to underground water studies. One of our very serious problems, very briefly I want to emphasize what other experts have said about the Pelton Dam theory. As long as that theory continues to hang over our heads the degree of private and State project construction will be very limited. If we adhere to the theory that the Federal Government should only participate to the extent that local and private interests cannot then we are going to have to do something about that Pelton Dam reservation theory. I won't go into it at great length. I did testify before the House committee that is in the process of considering legislation designed to cover that so-called Department compromise bill or Department bill.

We feel like the defense program, the matter of water development in these United States is of such vast importance that it cannot be made a partisan matter. While there are instances where the desire to engage in partisan debate overcomes the natural inclination to most of us to set it aside. We hope this committee and the Congress will continue in general terms to regard this as a nonpartisan matter. It is, as we say, vital, we think, to the country's future as national defense.

I want to again because of the time I will avoid going into the details—we were hopeful at one time that perhaps the committee would be able to meet in Colorado, at which time we could go into the many problems we do have in Colorado. We have problems that run the range from arid to humid climate, from international compacts in four different directions. We have more interstate compacts and interstate litigation than any other State in the United States.

I have learned since I have been here of the problems involved with respect to these meetings. I will follow it up with the staff and won't go into it at this time.

Again I thank you very much for the opportunity to present this statement.

Any questions I will be glad to answer.

Senator McGee. Thank you, Mr. Barnard.

Are there any questions?

Mr. Barnard. Thank you.

(The prepared statement follows:)

STATEMENT OF JOHN B. BARNARD, JR., CHAIRMAN, COLORADO WATER CONGRESS

It is my understanding that the committee is inquiring into the future necessary development of the water resources of the United States. I can very much appreciate the task which lies before you, as the Colorado Water Congress has inquired into the questions involved in the development of the water resources of Colorado, and has found that in such inquiry, one finds 10 new questions for every answer that is received. And yet, the problems facing Colorado and Western States which are similarly situated are only a part of the total problem in the United States, so the problems which you face, will, of necessity, be even more difficult and complicated than those we will face.

As a matter of fact, the legislative branch undoubtedly will not be able to develop answers to each of the thousands of questions that it will most certainly find to exist. It is my view that it will be able, because of the scope of the task

and the pressure of other matters of grave concern to the Nation, only to arrive at certain broad policy determinations under which water development should proceed from here on, and a general statement of future requirements. This is not to say that such policy determinations are not important—as a matter of fact, they are vital. Since our official agencies in Colorado are better able to present details as to what development is necessary in the future in Colorado, I will address myself to these policy determonations which must be made, or reviewed. The tremendous work ahead in the field of water development cannot be efficiently carried out until such determinations are made.

The present policies and standards under which we are engaged in water resources development today are, in the main, standards and policies which were established many years ago. Since they were established, many changes have occurred, and I personally believe that our policies and standards have lagged far behind these changed and changing conditions. I believe this to be true in many areas, but those of most concern to Colorado and its people are, in my opinion, the problems of making better use of the water resources we have, and the problem of restricting those uses which render the water unfit for other uses.

Of course, we have flood control problems, but we do not have as serious problems on this score as many other States. We do not have any significant water navigation problem.

Of the two matters of great concern—that is, the problem of making the best use of our very limited water resources and water pollution—the first is the most severe; but the latter is very rapidly growing in importance, and is, in one sense, a part of the former.

In respect to these two areas of widest interest in Colorado, I want today to merely advance some of the more basic policy questions for the consideration of the committee. The primary interest, of course, is that of the standard by which we determine, in water development problems, the respective obligations of the United States, the States, local government, and private interests and persons. For example, does the Federal Government have responsibility for providing funds for project construction? If so, on what basis? At the present time, the Federal Government pays, without reimbursement, the cost of providing water development for recreation, and those who benefit esthetically and economically, do not repay the Treasury. This is also true of those who benefit from flood control works, and, in some cases, at least, from projects which aid navigation. However, federally financed projects from which farmers receive benefits must be repaid. Projects which supply water for the generation of electric power must repay the commercial power investment with interest. The same is true of provisions to supply municipal and industrial water. While not advocating any specific policy in this field, I respectfully suggest that a uniform and reasonable standard should be adopted. Further, in respect to each class of water development project, the basic reasoning for determination of specific standards and criteria should be applied to all types of development. In addition, we must consider whether or not the Federal Government should, if it has the power, construct water supply projects which are not primarily irrigation projects. As a matter of fact, there are projects presently under congressional consideration which are wholly municipal water supply projects, or have only incidental reclamation benefits. It would seem that if the present policy concerning such projects is to be changed, it should be by change in basic law, not by authorizing legislation for specific projects.

Another more specific situation which has plagued those of us in the West for a long time is in the matter of the land limitation provisions under reclamation law. The limitation was established many years ago when the popular concept was that 160 acres would, in all circumstances, provide an efficient and economical family farm. More than half a century of experience has shown that such is not the case, and in many instances the application of the 160 acre limitation has been ludicrous. Hence, exceptions and qualifications have been repeatedly made, after much laboring in the committees and Houses of Congress. With the experience that we now have, it would seem that a review of this standard should be had. It may, perhaps, make better sense to establish standards based upon a determination of the most appropriate unit size within each area of project development.

As I say, these are but examples—there are many more specific instances which require policy determination or review.

Another policy determination which should be made is that of determining the responsibility for basic research in the water field. At the present time, it

appears that the Federal Government has a large responsibility in this field that is not being carried out. True, a lot is being done, such as salinity control, etc., but there is much more that can and should be done. In this area, it is my opinion that the Federal Government does have a much larger responsibility than it presently accepts. It has the means and the relative position which could prevent much of the duplication which exists today in the basic research field. This would be truly beneficial to all. My personal conviction is that the Federal Government could well assume greater responsibility in this area and less in areas where State and local governments logically could do the jobs. I am convinced State and local entities can more efficiently perform some of the functions which are now undertaken by the Federal Government.

Another basic policy determination that should be made is the legal basis for the rights to use water. Do these rights have their basis in the "natural law" that a resource necessary for the sustaining of life is the property of the people? This may, in given cases, lead to a riparian system or an appropriation system such as we have in the West. It might also be based on the property clause of the Constitution. This is the theory that, in the West at least, the Federal Government owns the territory acquired as well as exercising sovereign, governmental rights. This latter theory appears to be the contention of the Department of Justice at this time, as disclosed by testimony given at recent hearings on legislation designed to solve some of these problems.

You might ask what this has to do with the work of this select committee, and the suggestion might be made that this legal problem is the concern of the committees now studying the specific legislation dealing with the particular matter. To me, the answer is that it is very much tied in with water resource development if we hope to have private citizens and industries participating in resource development. If a standard is adopted under which the Federal Government only participates in development which cannot be accomplished by private interests, which, in my view, is at least the standard which we say we are following—then we assume that this policy would be carried out by permitting private development wherever possible. However, if we have no basis which can be relied on for establishing the right to use water, we prohibit private water resource development where it would otherwise be possible and desirable. Certainly, private investors cannot be expected to take the chance that a Government agency will walk in at some future time and take away the rights which give value to their investments. And yet, so long as this current Federal theory exists, that is the chance which private investors must face. There are in existence today many millions of dollars of investment which can be destroyed without compensation to the owners if the theory of the *Pelton Dam* decision is adhered to by the Federal Government.

There are many other facets which I cannot begin to cover at this time. The problems have multiplied, and this situation has again, in my opinion, been made more difficult because we have not taken time for a long hard look at each and every problem. I am hopeful that the very existence of this committee is the proof that we are going to begin to do so now. There are innumerable technical problems, coupled with the broad policy determinations, which must be solved. These policies should be logically consistent, but sufficiently flexible to permit reasonable application to the variety of conditions and circumstances which you will find involved in widely separated areas of the Nation. The solutions are made more difficult by political considerations which, in the best interest of the entire Nation, ought to be put aside. However, I must sadly observe that the temptation to use these matters for personal and partisan gain is, all too frequently, far too strong for those whose devotion to self-interest and partisanship, beclouds their duty to represent all the people in an intelligent determination of the problems. With all this in mind, I must confess that I do not envy you your task.

Thank you again for the opportunity to present this statement.

Senator McGee. I want to put in the record at this time a letter sent in from Mike Leon of Story, Wyo.

I think it worth mentioning in passing that Leon's wife, Senator Young, is Clarence Jenson's daughter. Clarence Jenson I met in Bismarck. They are native North Dakotans. We borrowed her for the time being to enrich our resources down here.

Senator Young. They can't help it with these good people.

(The letter referred to follows:)

HIGH PLAINS PUBLISHING CO., INC.,
September 16, 1959.

Senator GALE MCGEE,
Senate Office Building, Washington, D.C.

DEAR GALE: I greatly appreciate your bringing to my attention the meeting of the National Water Resources Committee. The topic is one which, as you surely know, is of deep interest to me. I would like to attend if for no other reason than to assess current viewpoints.

However, in early October (probably on the 5th) we will be leaving Story to go to Chicago for the annual meeting of The Audiology Foundation of which I am a member of the board of directors.

The Audiology Foundations is an organization of some of the country's top ear men plus laymen such as myself who are interested in the various problems, medical and social, having to do with deafness. It is perhaps ironic that at a moment when the attention of everyone is turned to missiles roaring off into space that we should be turning our backs for the sake of discussion about who in this country is deserving of scholarships in the field of hearing and where the money is to come from. Ironic, and perhaps a little sad.

And from the irony and sadness comes some of my savage distaste for the Soviet Union and the kind of science it has spawned, the insensate ugly offspring of a brutal parent. For these creatures have meant that we must match missile for missile, chase the Soviet lead in outer space, or allow what we mean to stand for to disappear into history. Meanwhile, back here on earth the blind, the deaf, the crippled, the cancerous, the legions of half-starved, await a deliverance that has been infinitely postponed because the genius of human minds has been turned to cosmic adventure. With all the bright promise science holds for alleviating individual and mass distress we are compelled to wander willy-nilly down this wretched sidetrack. This is the great contribution to our times by Soviet science operating through Soviet ideology, to subordinate the individual to infinity much as the Soviet Government has subordinated the individual to the state.

I trust I sound as bitter as I feel. Were a fraction of the money now being spent on national defense being spent on research into deafness, blindness, et al., all of us who have experienced deprivation of one sort or another could look ahead to some degree of relief in our lifetime or, if that were expecting too much, we could at least for good reason feel grateful that such efforts and such goals existed. Speaking for myself, I know that whatever chances there are that I will ever hear again are slipping away with each passing year that funds must be scraped up and rationed out to support pathetically inadequate research programs. This happens to be my sacrifice to the cold war, a ridiculously insignificant one to be sure when compared with those of countless others but enough of one to make me aware of what our losses are in achievements unfulfilled.

History will, I think, vindicate us for matching missile with missile.[1] What we are spending for national defense must be spent under the circumstances and perhaps we should be spending a great deal more. But it seems to me that for us to spend as we are without admitting to penalties therein, without constantly indignantly and without fury driving home to minds everywhere the dreadful losses therein to people everywhere is almost to say that we don't care a damn about these losses. Science, or that most effluent sector of it, is not going in the direction any sane man would want it to. It is time, I think, for someone to say and say over and over again these things until the roar and prestige of Soviet missiles have diminished to a whisper and a shadow. Somehow, if we are to survive morally as well as physically as a nation we must be able to turn from outer space back to the inner man where the only challenging and lasting adventures are to be found.

To return to the matter of the water meeting, if it would be acceptable to the committee that I submit a written statement without attending, I would like to express what I think may be a minority viewpoint but a valid one nonetheless. I have put in several years of study on the topic and have had the opportunity of discussing it with people close to it plus the chance to observe water problems and projects coast to coast. I would welcome the chance to

[1] Until we have alternatives.

speak my mind on Wyoming's particular role in America's water future. If it is permissible for me to submit the statement without being present would you be so kind as to let me know where and to whom I should send it. My thanks to you.

Sincerely,

MIKE LEON.

STORY, WYO.

Senator MCGEE. Now, Mr. S. J. Jiacoletti of the Wyoming Game and Fish Commission.

STATEMENT OF S. J. JIACOLETTI, STATE GAME AND FISH COMMISSIONER

Mr. Chairman, Senators of the panel, may I first offer my sincere thanks on behalf of the Wyoming Game and Fish Commission for the opportunity of appearing here today.

As the legally authorized agency in charge of managing the wildlife resources of this State, the Commission has a direct interest and responsibility in any matters which affect the well-being of our wildlife and the highly important economy which that wildlife engenders and supports. Any water policy recommended by this committee is certain to have its effect upon that wildlife.

Let me dwell for just a moment, if I may, on the importance of fish and wildlife to the economy of the State of Wyoming. It has been determined that approximately one-third of the State's $165 million income from tourist trade comes directly from hunting and fishing. In Teton County, elk hunting alone means an income of nearly $1 million each year. Hunting and fishing in Wyoming is a big business. The product of this outdoor recreation activity yields some $50 to $60 million to the State each year.

The importance of this economy is further evidenced by the fact that Wyoming sold more hunting licenses to nonresidents in 1958 than any other State in the Union. This points up the fact that Wyoming's wildlife resources are not only used and enjoyed by thousands of Wyoming people but by nearly as many people from other States. Indeed, people from every State in the Union and even some foreign countries take advantage of these resources every year.

Past experience indicates that cooperative planning and study of all factors are mandatory if wildlife values and the State's recreation economy are to be protected in any water impoundment, flood control or stream diversion project. At first glance, it may appear that fish and wildlife are less directly concerned in water projects and planning than other phases such as power and irrigation. However, we must remember that outdoor recreation is one of the State's largest industries. It is an industry that cannot be ignored in the development of any just water policy.

I would like to give one example where lack of proper planning in proposed water development on the Snake River is threatening to destroy valuable wildlife resources. I choose as an example, Teton County—not because it is representative of the State—but because it dramatizes the problems we face in other areas.

The fact that over 20 large dam sites are under consideration on the Snake River drainage gives a graphic example of the dangers that lie ahead unless careful cooperative study and programming can be made a reality.

The world's largest elk herd, ladies and gentlemen, the pride of Wyoming and the Nation, is threatened by lack of cooperative planning and by narrow-minded determination. Three main factors are involved in the specific example afforded by Teton County, the Jackson Hole elk herd and ambitious dam construction plans.

No. 1. The most important natural elk winter ranges remaining in Jackson Hole are along and adjacent to stream bottoms. Some of these would be flooded by construction of the proposed dams. There are no sizable areas suitable for winter elk range in Jackson Hole except for that winter range the elk now use. For this reason the Commission doesn't believe that the loss of any part of the present elk range could be tolerated.

In spite of the fact that the majority of the Jackson Hole elk spend the winter on feedgrounds, there are still many, depending upon the severity of the season, that winter on natural ranges. Even those elk which do winter on feedgrounds are dependent upon natural range for the spring and fall seasons. It therefore appears that the loss of winter range through flooding will be accompanied not only by the loss of the elk but also by the loss of potential for producing elk for all time.

No. 2. The system of major elk feed grounds in Jackson Hole has been established for many years. In spite of this there is difficulty each year in getting elk to feedgrounds without damage to haystacks and other private property. It's a major problem in all areas where elk are fed in spite of extensive fencing and driving by horse, snoplanes and airplanes.

Now, suppose that because of water impoundments, two or more of these feed grounds were suddenly moved. The results can only be imagined, but there is little question that they would be devastating. Some of the elk could undoubtedly be moved to new feedgrounds easily. However, others could not be moved quickly enough to prevent wholesale starvation. The more successful feedgrounds are those locations favored by the elk themselves. Feedgrounds cannot be placed according to factors not concerning the animals, if the elk are to be adequately cared for.

No. 3. Supposing that, by superhuman effort, we do succeed in moving the wintering areas, we would be faced by still more problems. Large reservoirs on the Snake, Gros Ventre and Buffalo Rivers would effectively block migration routes to many of the more important summering areas. Would the elk go around these to their old traditional summer ranges, or would they tend to concentrate in the areas along the routes on either side? If they did return to their winter range, would they again encircle the lake on the return trip, or would they tend to pile up along the shore until the habitat was destroyed?

In addition, each individual dam would probably present problems peculiar to that particular location. Wildlife populations in any area comprises a complete biological unit. Disturbing or altering any part of the habitat will undoubtedly exert a power influence upon that biological unit.

If plans continue for the several proposed damsites for both flood control and hydroelectric power on the Snake, Buffalo, Gros Ventre and Hoback rivers, elk winter ranges will be reduced both by flooding and by denying elk access to them over traditional migration routes.

Further range limitations can result only in the eventual and permanent reduction of the herd. If the proposed water storage plan in Jackson Hole is completed as planned, the Jackson Hole elk herd will undoubtedly be reduced to a token herd.

Of course the story does not end there. Snake River cutthroat trout are also threatened by the proposed water plan on that river drainage. The building of dams will prevent or impede upstream migration, a conditon required for proper maintenance of the cutthroat trout populations. Incidentally, the Snake River is one of the few places in the United States where the cutthroat trout is still available.

I offer this brief summary of the Snake River plan only to illustrate the dangers that lie in the lack of proper planning. I do not intend to take any more of your time in citing examples of what could happen in the event water impoundment and other projects are continued without cooperative programing. However, there are many more. The majority of these examples are included in the written statement that has been given to this committee today.

The point that I want to make is simply this. Fish and wildlife are valuable resources in the State of Wyoming. They are resources this State can ill afford to lose. In any water project, whether it be water impoundment, flood control, stream diversion, or what have you, fish or wildlife will be affected in some way by that project. In some cases, wildlife habitat can and has been improved. However, in many others, valuable game and fish habitat has been destroyed, habitat that can never be replaced.

We recognize that game and fish interests cannot stand in the way of industrial or agricultural development where it is needed, but on the other hand, we cannot sit idly by and watch the elimination of irreplaceable natural resources where it is not necessary.

Every water use project must be judged on its own merits.

In project planning, efforts must be made to establish a program which will be most profitable and least damaging to all interests concerned. In any event, water policy must be determined in the best public interest. We ask only that fish and wildlife and their correlated recreation and economical aspects be given their full and due considerations in water projects that may be initiated or considered in Wyoming. Public Law 732 is not adequate to insure such consideration.

Because of our past experiences, both preceding and following Public Law 732, it seems imperative to establish realistic and effective joint planning, study, and review of all water projects if our State and Nation are to realize full value from our water resources.

Therefore, because lasting precedents will be established through the existence of this committee, we would like to see machinery established to guarantee cooperative, joint multiple-use planning in all water use projects now.

We would like to see councils of State agency representatives in each State established for the purpose of receiving, reviewing, and making recommendations on all proposed water projects within a given State. Such a committee would further act as a joint controlling agency to draw up a set of procedures to avoid needless loss of fish, wildlife, and recreation values. A control such as this is legally proper, since by Wyoming law at least, the State owns the water. We would like to

see a national committee formed of representatives of State committees and appropriate Federal agency representatives with the legal function of reviewing and making recommendations on all proposed Federal water projects prior to any fund appropriations and for final reviews on each proposal to be submitted to the appropriate legislative committees.

We would like to emphasize that we recognize the need for further reclamation activity, that we endorse and support thoroughly planned, necessary projects. However, we are opposed to the many uncoordinated projects which not only fail to conserve the resources on which all wealth is based, but which are sometimes actually destructive of our irreplaceable resources.

Conservation and resource management, ladies and gentlemen, dictate the future course of our Nation. That course must be directed by representatives of all interests and industries. A single bureau is not to be relied on to direct our economic and physical destiny.

Senator McGEE. Do you have a breakdown of how many out-of-State licenses you sold in North Dakota and Oklahoma?

Mr. JIACOLETTI. I didn't bring those statistics with me, Senator McGee. But North Dakota is one. Of course Senator Kuchel should be here because I think California and Texas are next. But offhand I would say between fishing and hunting we issue in the neighborhood of 150,000 licenses a year.

Senator YOUNG. I know you have a great many North Dakota people come in there.

Mr. JIACOLETTI. Yes, we do.

Senator YOUNG. I might say yours is a very interesting statement, which I want to read in full at my first opportunity.

May I ask this question? Do you have enough moose to have an open season?

Mr. JIACOLETTI. That is a very good question, Senator Young. Wyoming is the only State in the Union that really has a moose season. We issue around 900 to 950 moose permits each year.

Senator YOUNG. You do?

Mr. JIACOLETTI. There are only two other States that have moose hunting, Senator and that is Montana and Idaho. I think at one time Wisconsin may have had some but I can't recall.

Senator McGEE. We require whoever shoots them eats them.

Mr. JIACOLETTI. That is right. We have one law here in Wyoming where you can take the meat home. There are several Western States they won't allow you to do that.

Senator YOUNG. I always loved to hunt but I was just a poor shot. I never thought they should charge me for a license.

Mr. JIACOLETTI. We only issue a limited number of licenses, 2,500 of them.

Senator McGEE. Thank you very much.

At this point in the record there will be inserted the statement of the Wyoming Game and Fish Commission.

(The prepared statement referred to follows:)

STATEMENT OF THE WYOMING GAME AND FISH COMMISSION, BY S. J. JIACOLETTI, STATE GAME AND FISH COMMISSIONER

The legal authority of the Wyoming Game and Fish Commission lies directly with game and fish management. In addition, because of its wildlife manage-

ment responsibilities, the commission has direct interests and concern in any matter which affects the well-being of that wildlife and the very substantial and important economy which it engenders and supports.

Past experience indicates that thorough, fully cooperative planning and study of all factors are mandatory if wildlife values and the State's recreation economy are to be protected in potential water impoundment or other water use projects. At first thought, it may appear that fish and game are less directly concerned in water use project planning than other phases such as irrigation and power. However, it must be remembered that outdoor recreation is now Wyoming's third ranking industry. In any reclamation, flood control or stream diversion project, an industry of this importance should be considered in the original planning of that project. Fish, wildlife and recreation should have equal status with other industrial interests in planned water use. In too many cases, recreation has been considered only after the demands of other industries have been satisfied.

While the game and fish commission is deeply concerned in proposed reclamation and other water projects throughout the State, this report dwells for a large part on Teton County and the Snake and Green River drainages in Wyoming to illustrate the need for cooperative planning.

The fact that over 20 large damsites are under consideration on the Snake River drainage in Wyoming and specifically in Teton County gives us a graphic example of the dangers that lie ahead unless careful, cooperative study and programing can be made a reality, unless the specter of the high-handed autocratic attitudes of those agencies concerned with dam building, flood control and stream diversions are bridled by committees and hearings of this type and by the increasing recreation demands of our Nation's growing population.

TETON COUNTY

It has been determined that approximately one-third of the State's $165 million annual income from tourists is directly attributable to hunting and fishing. We choose as one example of water use planning—or rather lack of it—Teton County, not because Teton County is representative statewide, but because it dramatizes the problems we face in water use planning in varying degrees in other areas. In Teton County recreation means an annual income of nearly $1 million from elk hunting alone, an amount nearly equal to the county's record agricultural product this year. Since the county is 96 percent federally owned. it would, after the flurry of dam building subsided, fade and die out as a local government should the Jackson Hole elk herd suffer irreplaceable curtailment through loss of migration routes or wintering areas.

JACKSON HOLE ELK

The world's largest elk herd, the pride of Wyoming and the Nation, is threatened by lack of cooperative planning and by narrow-minded determination. Three main factors are involved in the specific and graphic example afforded by Teton County, the Jackson Hole elk herd, and ambitious dam-construction plans:

1. The most important natural elk winter ranges remaining in Jackson Hole are along and adjacent the stream bottoms, some of which would be flooded by construction of dams. There are no sizable areas suitable for winter elk range in Jackson Hole except for that winter range the elk now use. For this reason the Commission doesn't believe that the loss of part of the present elk range could be mitigated.

One of the major winter problems concerns over-concentration of elk on the few remaining areas where they can still winter, particularly during the more severe winters. Even with our present feeding program, some of the elk spend the winter on natural range all year, even during such a severe winter as 1956. Those elk which do winter on feedgrounds are dependent upon natural range for the spring and fall seasons and, to some extent, during mid-winter. In Jackson Hole much of the late fall, and nearly all of the early spring, range is identical to the winter area; so increased feeding cannot replace the loss of natural winter range through flooding or other causes. It, therefore, appears that loss of winter range in Jackson Hole will irrevocably be accompanied, not only by loss of elk, but also by the potential for producing elk for all time.

So far, extensive range improvement practices have proven to be extremely expensive, and have nearly always failed unless given complete protection for

3 to 5 years. This, then, means that range revegetation does not offer a means for replacing elk winter range, as the loss of such range would make it even more imperative that all the area be used each winter. In some parts of Jackson Hole our reports show that the elk are too concentrated at the present time. It, therefore, does not seem feasible that we could raise the same number of elk on even less range, even with increased emphasis upon supplemental feeding.

2. The system of major elk feedgrounds in Jackson Hole has been established for many years; the National Elk Refuge in 1912, South Park about 1927, and Horse Creek and Dog Creek a little later. nI spite of this, we have difficulty each year in getting the elk to these areas without damage to haystacks and other private property. It is a major problem in all the areas where elk are fed in spite of extensive fencing and driving by horses, snowplanes, and airplanes. Even so, the great majority of the elk seek out the feedgrounds of their own accord. It's only a relatively small percentage of the animals which cause all this trouble. Also, these feedgrounds were originally chosen because they were favored by the elk.

Now, suppose that a couple of these were suddenly moved in their entirety. The results can only be imagined, but there is little question that they would be devastating. Some of the elk could unquestionably be moved fairly easily but certainly others could not be moved quickly enough to prevent wholesale starvation, particularly those which might have to go around a large, man-made lake to get to their old winter range. In 1953, the Horse Creek feedground was moved about 1½ miles down the creek. In 1956, in spite of 4 years concerted effort to move all these animals, a sizable group remained in the exact site of the old feedground. This illustrates that moving entire herds of elk would necessarily be accompanied by the loss of many of them if the original area was completely denied to them.

The more successful feedgrounds are those locations favored by the elk themselves, with their numbers carefully regulated. Feedgrounds should not be placed according to factors not concerning the animals if the elk are to be adequately cared for. Such features as the amount of snow, natural browse and cover are extremely important.

3. Supposing that, by superhuman effort, we do succeed in moving the wintering areas, we would be faced by still more problems. Large reservoirs on the Snake, Gros Ventre and Buffalo rivers would effectively block migration routes to many of the more important summering areas. Would the elk go around these to their old, traditional summer ranges, or would they tend to concentrate in the areas along the routes on either side? If they did return to their original range, would they again encircle the lake on the return trip, or would they tend to pile up along the shore until the vegetation was over-used, and perhaps the elk were even suffering from lack of food?

Elk behavior is a subject we know little about, but we are becoming increasingly aware of its importance. Elk are apparently dedicated to habit and we cannot assume that obstructions or even partial barriers will not permanently influence their routes during migration. We have much evidence in fact, that they will. We also know that they will not distribute themselves evenly throughout a summer range. On the contrary, we already have problems of over-concentrations in some summer areas, and relative vacuums in other locations.

There is ample summer range in Jackson Hole for the elk which are there. However, from the standpoint of elk management, summer distributions should be carefully regulated. This could not be done if major migration routes were blocked. It is also important from a management point of view, to distribute the ever-increasing hunting pressure over as large an area as possible.

As an example, the Snake River Narrows Dam would flood the Dog Creek feedground. Many elk from this feedground cross the river in the spring and summer to the south, as far as the headwaters of Little Greys River. If the dam was built, two new feedgrounds would be required, one on either side of the lake, or else summer range on at least one side would be denied to the elk. From 5,000 to 10,000 elk migrate across the Buffalo River each spring and fall. It is conceivable that artificial lakes on this river could completely disrupt the summer distribution in the vast area to the north of that river.

BIG GAME POPULATIONS

The proposed construction of dam sites in the Jackson Hole and Upper Green River Valley poses a serious threat to a large percentage of deer and moose as well as elk populations in these areas. We wish to present a brief summary of feedground locations and natural winter ranges of elk, moose and deer in these areas and the effects that inundation would have upon them.

Deer

Deer winter ranges are quite well defined and very limited in size in the Jackson Hole area. Nearly all of the winter range is comprised of the steep, south-facing slopes along the Snake and Hoback River Canyons south of the town of Jackson (see map).[1] The bulk of the deer population is dependent upon the browse-type plants found in this area for sustenance through the heavy snow period of the year. Inundation of any of this type of forage in the above-described areas would result in a corresponding decrease in the carrying capacity of the winter range and, of course, a proportionate loss of the deer herd. These same areas also provide natural winter range for elk and moose.

Moose

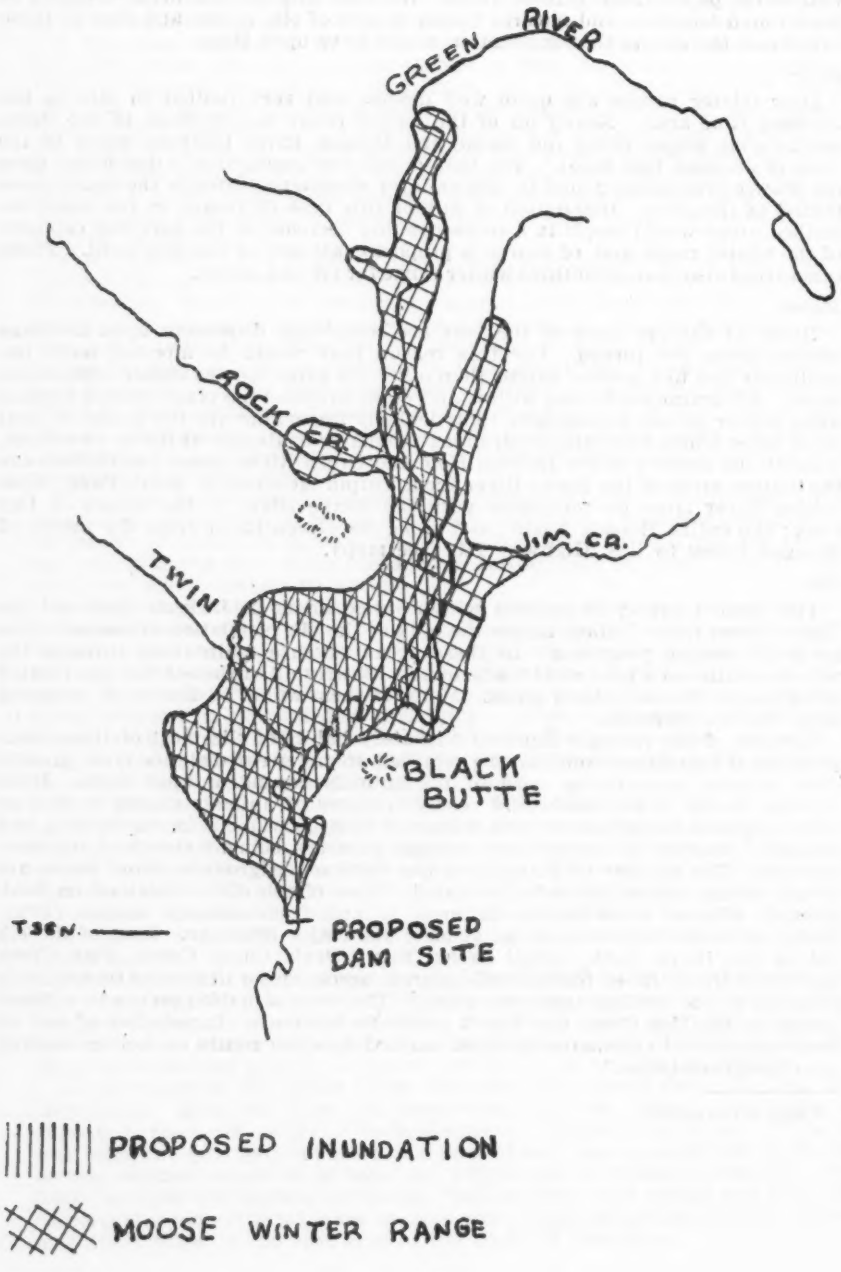
Moose at various times of the year are completely dependent upon drainage bottom areas for forage. For this reason they would be affected more immediately and to a greater extent than other big game species should inundation occur. All drainages having willow and other browse-type plant species support some winter moose populations. Particularly important are the areas of least snow cover which generally occur along the major drainages at lower elevations. Vital to the support of the Jackson Hole and Green River moose populations are the bottom areas of the Snake River from Turpin Meadows to South Park; Gros Ventre River from its confluence with the Snake River to the mouth of Dry Fork; the entire Hoback Basin; and along the Green River from the mouth of Waggon Creek to U.S. Highway 189 (see map).

Elk

The limited supply of natural winter range areas in Jackson Hole and the Upper Green River Valley, makes the bulk of the elk population dependent upon artificial feeding programs. In these areas, elk are maintained through the winter months on a total of 14 feedgrounds. Nearly all of these areas are located along major stream bottom lands. Many of them would be flooded if proposed dams were constructed.

Because of the strongly inherent migratory habits of elk, most of these feedgrounds, if inundated, could not be replaced at any great distance from present sites without jeopardizing most of the animals dependent upon them. Even average winter conditions would result in losses of animals unable to find or reach replaced feedgrounds. The winter of 1958–59 was not unduly severe, and probably resulted in fewer than average numbers being maintained on feedgrounds. The number of animals on the various feedgrounds listed below are actual counts unless otherwise indicated. Most of the elk maintained on feedgrounds migrate considerable distances to and from summer ranges. Practically all migration routes cross at least one major drainage. Most of the elk fed on the Black Rock, Alkali Creek, South Park, Camp Creek, Fish Creek and upper Green River feedgrounds migrate across major drainages immediately adjacent to the feeding area (see map).[1] The same situation occurs to a lesser degree at the Dog Creek and Black Butte feedgrounds. Inundation of any of these sites would automatically block major migration routes as well as destroy vital feedground sites.

[1] Map not supplied.


GREEN RIVER
ROCK CR.
TWIN
JIM CR.
BLACK BUTTE
T36N.
PROPOSED DAM SITE
PROPOSED INUNDATION
MOOSE WINTER RANGE

Number of elk on feedgrounds, 1958–59

Feedground:	Number of elk	Feedground—Continued	Number of elk
Black Rock	86	Greys River	525
Alkali Creek	363	Dell Creek	206
Fish Creek	284	McNeal	199
National Elk Refuge	6,047	Franz	489
South Park	658	Black Butte	200
Horse Creek	273	Upper Green River	282
Camp Creek	466		
Dog Creek	352	Total	10,430

The National Elk Refuge figure is based on an actual count. The other figures are based on the average number of animals fed during the feeding period and are not maximum counts. It should also be noted that due to a very mild winter in 1958–59, fewer elk were fed over a shorter period of time, so the figures are considerably below the 10-year average.

Effects of flooding upon big game in Jackson Hole is well summarized in "The Elk of Jackson Hole", A review of Jackson Hole Elk Studies by Chester C. Anderson, in which is stated (pp. 84–85) :

"Plans continue for several proposed dam sites for both flood control and hydroelectric power on the Snake, Buffalo, Gros Ventre and Hoback Rivers. Most of these dams would limit the elk winter ranges when completed, both through flooding and by denying elk access to them over traditional migration routes.

"Further range limitations can result only in the eventual and permanent reduction of the herd. Unlike reduction by hunting this would not solve any problems concerning wildlife but only complicate those already existing. Thorough investigation into their effects on the welfare of all species of wildlife and fish must precede plans for further exploitation of public lands. In many instances, these wildlife values might outweigh the industrial value of the proposed development. Protection of the wildlife habitat is of extreme importance to the economy of Jackson Hole where so many species in such large numbers are confined to a small area. This habitat cannot be duplicated elsewhere. Its loss would detrimentally affect the entire State."

The proposed Kendall Reservoir site on the Upper Green River would inundate 7,600 acres, including 2,130 acres of irrigated pasture and 5,470 acres of grazing land. The latter figure, as the map indicates, is all utilized as moose winter range.

In the winter of 1958–59, moose distribution on the Upper Green River was limited almost entirely to the area to be used for water storage. Approximately 90 percent of the moose distribution was actually in the river bottom that is to be put under water.

The elk movement to the Black Butte feedground undoubtedly would be affected by the Kendall Reservoir. Some elk are known to move to the feedground from the Rock Creek and Twin Creek region which is to the north and west across the proposed dam site from the present feedground.

The Kendall Reservoir would be detrimental to one of the larger moose herds in the State by removing an important part of their winter range.

Elk movement to the Black Butte feedground would be partially cut off by the proposed dam site.

If only a small part of the dams that are indicated to be under consideration in the upper Snake River drainage are ever constructed, the natural conditions of the area will be so altered as to cause the Jackson Hole elk herd, as we know it today, to be a thing of the past. The Wyoming Game and Fish Commission is on record as being opposed to such thoughtless planning. We will continue to be opposed until such time as the initiation of these or any alternate projects is determined to be in the best public interest. Neither the Snake River Narrows site nor those sites on the Hoback, Gros Ventre, Upper Green, or Buffalo Fork Rivers presently under consideration, have so far proved to meet these conditions.

These are only generalizations for the most part. In addition, each individual dam would probably present additional problems peculiar to that particular location. Wildlife populations in any area comprise a complete biological unit. Disrupting or altering any part of the habitat will exert a powerful influence upon such a biological unit. The attached map of deer

and moose winter ranges indicates the disastrous effects which poorly planned impoundments could have. The maps afford a view of elk migration problems mentioned earlier. Can you imagine Jackson Hole stripped of wildlife? Lack of planning can do just that. The exhibits are graphic on this point.

This is not purely a local problem. People from over the Nation come to western Wyoming to enjoy seeing and hunting the wildlife which sustain themselves in winter on areas which may be flooded or destroyed.

The value to the State of Wyoming of the currently available elk hunting is inestimable. If eliminated it would have a detrimental and damaging effect on the economy of Teton and Lincoln Counties in particular, and Wyoming in general. The people of the entire Nation utilize the area and enjoy its famous hunting and fishing. They have a stake in the matter too.

In considering proposed water-use projects in other parts of Wyoming, the following is a brief résumé of planned projects and their possible effects on wildlife:

1. Woodruff-Cokeville: If this project is undertaken without special measures to mitigate wildlife losses, the virtual elimination of duck and goose production of the Bear River in the Cokeville area can be anticipated. This is presently Wyoming's best waterfowl production habitat area.

2. The Flaming Gorge project, now underway, will not only destroy deer habitat along the Green River from Green River City to the Utah State line, but will virtually eliminate goose nesting habitat along that stretch of the river. We have proposed the waterfowl area on the Black Fork River as compensation for the loss, but under present laws have no assurance that our proposal will be accepted and funds provided.

3. Seedskadee: Here again, the State is losing elk, deer, and antelope winter range as well as a sage grouse wintering area. Furthermore, waterfowl production will be seriously reduced from the town of LaBarge to Green River City. The proposed mitigations of the Seedskadee waterfowl refuge will probably take care of waterfowl losses, but will certainly not replace the loss of big game and sage grouse winter range.

4. LaBarge project: This new project will irrigate lands along the Green River between Big Piney and the town of LaBarge. Because of the extra use of water for irrigation and increased human disturbance along the river, it is believed goose production will be curtailed drastically. Furthermore, we can anticipate serious problems with elk and deer which now migrate to and across the river from the mountains to the west. With completion of the project, routes of game travel will be cut off by irrigated lands, with subsequent damage very likely.

5. The Rocky Point dam proposed above Dubois would inundate well over 50 percent of the moose winter habitat in the Wind River drainage. There is no replacement for this range. Such an impoundment would also seriously disrupt movement of elk from their summering areas to winter range.

6. Sublette: One plan for the Sublette project encompasses diverting water from the New Fork River drainage across the Great Divide Basin and on the North Platte River system. Such a project will have profound implications on game herds in that area, as it will provide a source of water for what is now an extremely arid region.

7. The Oregon Basin project provides an opportunity for considerable waterfowl and upland bird enhancement; however, wildlife conservation agencies must have position as partner in the enterprise to realize possible benefits.

FISHERIES

Then there is the matter of our cutthroat trout fishery on the Snake River. This is an important attraction. This is one of the few places left where the true cutthroat is available. This stream's fishery is predominantly self-maintained, which is an important factor since information collected by our fisheries biologists indicates that 75 percent of the fish taken in Wyoming are wild fish rather than those reared at our hatcheries.

Dams, of course, prevent or impede upstream migration, the condition required for proper maintenance of the cutthroat trout populations. Our latest information on the operation of Snake River Narrows Reservoir indicates that it will have an average annual fluctuation of 60 feet, a condition certainly not conducive to the maintenance of trout populations. Thus, the reservoir fishery created by this dam in no way compensates for the loss in the existing excellent river fishery.

The recent decline of the trout fishery in Jackson Lake is directly attributable to the fluctuating water level, not fishing pressure, as is often blamed. Its decline began when the natural lake level was raised by the dam at Moran and the subsequent use of its water for irrigation in Idaho. We have written off that loss but feel that a second look should be given to other dams under consideration in Wyoming where, it is argued, that their justification is that the value of the dams to agriculture or power far exceeds that derived by Wyoming from the fish and wildlife affected.

Snake River

The proposed Snake River Narrows Dams would inundate 30 miles of very productive stream fishing and considerable important trout spawning area. This part of Snake River is paralleled by a paved highway allowing easy access for anglers. During the summer fishing season of 1958, there were over 10,000 angler days of use on this part of Snake River. The fact that over 60 percent of this use was by nonresident fishermen emphasizes the importance of this fishery. This fishery is self-sustaining and is the only area in which native cutthroat trout support an extensive fishery.

To put an economic value to the State of Wyoming on this fishery is rather difficult. However, using the figures from a survey conducted in 1955, fishermen spent in Wyoming $1,700 per mile of Snake River fished. Figuring that our census covered only a 6 percent return, this would put a value, in 1955, of $28,334 per mile, or over $850,000 for that part of Snake River considered here. Increased fishing pressure and rising costs since this survey will have considerably increased the value of this fishery.

The question will arise, Will not the reservoir create a new and better fishery than that stream fishery which is destroyed? The answer to this question for this particular water is "No." In fact, the reservoir will not create a fishery. Due to shoreline conformation and operating drawdowns, food production and consequently fish production will be very limited. These same factors will make access to the reservoir very difficult.

Several plans have been considered for this proposed dam. All would have the same effect on the fishery. The only difference being in the amount of river inundated.

Any dam in this area would be a total loss to the State of Wyoming from a fisheries standpoint.

A reservoir in the Ramshorn site location would block all fish movement up the Hoback River except for the lower 7 miles, thus making inaccessible many miles of excellent trout spawning area. It would inundate about 15 miles of Hoback River and about 5.5 miles of Granite Creek. Hoback River is paralleled by a paved highway and is very accessible to anglers, resulting in heavy tourist use. With steep canyon walls and operation drawndowns this reservoir would not be expected to produce a sport fishery.

A reservoir at the Granite Creek site would block all fish movement except the lower 12 miles of Hoback River, thus eliminating about the same amount of trout spawning area as the Ramshorn site. It would inundate about 12 miles of stream also easily accessible to anglers. For reasons stated above, this reservoir would not produce a sport fishery.

The Pfisterer Dam site is about 17 miles above the mouth of Hoback River. A great part of the excellent trout spawning area of the Hoback drainage is above this site. It would inundate about 9 miles of easily accessible fishing water.

No engineering data is available for the Cottonwood site on the Gros Ventre River. A dam here would block all the drainages of Cottonwood Creek, Fish Creek and the upper Gros Ventre River to trout migration.

Blackrock site on the Buffalo Fork River is about 16 miles above the mouth of the Buffalo Fork River. It would inundate about 7 miles of easily accessible fishing water. A dam here would block to fish migration the very extensive drainage of the upper Buffalo Fork River.

Green River

In reviewing an evaluation of the sport fishery of the upper Green River Basin relative to proposed water development, we wish to present the following considerations:

1. *The fishery.*—As a result of the establishment of the Fontenelle Reservoir of the Seedskadee project, the Wyoming Game and Fish Commission will be forced into the management of a sizable reservoir fishery. In conjunction with the anticipated recreational use of the reservoir itself, a sizable increase in the

utilization of immediately adjacent river areas can be expected. Such would be the status of that part of the Green River included in the LaBarge project. At present, the upper reaches of the Green River support a cohabiting population of trout and rough fish, including carp and suckers. With the formation of a sizable reservoir habitat, it is only reasonable to expect an explosion in the population of rough fish, particularly carp, and a rapid deterioration in the trout fishery in and above the project area. Every possible consideration must be given to immediate and continuing control of coarse fish if a trout fishery is to be maintained. Initial control measures should include thorough chemical treatment of all carp infested waters for which the cost of toxicant, alone, will amount to about $55,000. Secondly, there must be provision for continuing control by subsequent periodic chemical treatment and construction of a combination barrier-trap capable of stopping upstream carp migrations and allowing annual removal of large numbers of adult spawners. Following the initial chemical treatment the game and fish commission will be required to establish a trout stocking program which may very well tax existing trout production facilities to capacity.

2. *Public access development.*—The Seedskadee and LaBarge projects together will include a 7,000-surface-acre reservoir and better than 30 miles of upstream river. All possible consideration must be given to adequate public access facilities for both the reservoir and river areas. There are better than 10 miles of Federal and State lands presently adjacent to the west bank of the Green River included in the LaBarge project. These lands are scattered strategically along the 30 miles of river area and every effort must be made to secure public fishing access and adequate recreation development on said lands. With the establishment of the reservoir, it is reasonable to expect a tremendous increase in the recreational utilization of the area. Any such increased use should justify the development of recreational facilities, to include access roads, automobile and boat-trailer parking areas, boat launching ramps, and camping and picnicking grounds.

3. *Water control guarantees.*—With the development of such a recreational area, it is only economically sound to provide every possible assurance of adequate fishery water conditions in both the river and reservoir. The reservoir construction should include a conservation pool capable of preventing conditions similar to those periodically occurring on John Martin Reservoir in Colorado. It seems probable that, if all the presently considered water development projects of the upper Green River were to be established together with future industrial and domestic requirements, there may be periods when some sections of the river will be completely without water. With the skyrocketing values of hunting and fishing recreation, all sections of the Green River in Wyoming should be protected by legally established continuous minimum waterflows. In the case of the Seedskadee-LaBarge complex, it is recommended that a continuous minimum flow of no less than 200 cubic feet per second be established by law for those sections of the river immediately below the LaBarge diversion and the Fontenelle Dam.

4. *Control of fish loss in diversions.*—As both the LaBarge and Seedskadee projects are designed for irrigation purposes, it is reasonable to suppose that large numbers of game fish may be lost in diversion ditches. All possible consideration should be given the installations and maintenance of practical and efficient fish-screening devices in all such diversions.

The Sublette project

Under the Sublette project, there are two major divisions of proposed development. The Buckskin division involves the waters of the New Fork River drainage, and the West Side division, those of the upper Green River proper in the vicinity of Kendall and above. Both of these divisions would drastically and adversely affect some of the finest recreation and sport fishing areas of Wyoming.

The Buckskin division

The Buckskin division includes proposals to establish water-control units on Fremont, Burns, Boulder, and Halfmoon Lakes. All of the water fluctuations involved would be detrimental to existing trout populations and recreational values and almost ruinous in the cases of Burnt and Boulder Lakes. Contingent with lake manipulation would be the fluctuation of Pine, Pole, Fall, and Boulder Creeks and, consequently, the New Fork River. Periodical dewatering and high-water scouring would destroy the physical and esthetic values, the trout food supply, and the trout population of miles of prime fishing and recreation streams.

If it becomes absolutely necessary to establish controls on the aforementioned lakes, partial compensation for loss of the lake values would require the following minimum program: A greatly increased stocking program of catchable-sized fish to offset reduced natural reproduction; construction of boat-launching ramps of sufficient length to accommodate increased lake fluctuations, and legally guaranteed continuous minimum flows on all affected streams. The following continuous minimum flows are recommended for the principal streams involved: Pine Creek, 30 cubic feet per second; Fall Creek, 20 cubic feet per second; Pole Creek, 25 cubic feet per second; Boulder Creek, 30 cubic feet per second; and New Fork River, 150 cubic feet per second.

The West Side division

Under the West Side division, consideration has been given to three possible reservoir sites. These would be called Gannett, Wells, and Kendall Reservoirs. Any or all of these would destroy prime trout-stream waters, and produce excellent habitat conditions for the development of large populations of coarse fish. The loss would be further aggravated by the fact that most of the river area included in this division lies in the Bridger National Forest and is presently readily available to the public. It cannot be argued that the construction of any such reservoir fishery, in an area already abounding with large bodies of water, can begin to compensate for the loss of an extensive section of accessible and unusually fine river fishery.

WATER QUALITY

Water quality is a continuing problem in game and fish management and one which has been receiving increased attention within the State. Considerable progress has been made, but here again, cooperative planning for joint multiple use must be made a reality if clean water for domestic, industrial, and recreational use is to meet even minimum demands during the next decade.

Let us cite an example of values lost through failure to recognize and plan for full, beneficial use of community water.

First, we might point out that fish and wildlife economic values are much greater than many of us suspected. Recent surveys show sport fishing and hunting was a $3 billion national industry in 1955. That same year, it was estimated that hunting and fishing was worth somewhere around $50 million in Wyoming. Taken on an average, that's over $2 million for each county in Wyoming.

More specifically, it is estimated that fishermen spend about $8 to catch a pound of trout in Wyoming. To be still more specific, the fisherman expenditure value of the North Platte River from Alcova to Glendo has a potential value to the Casper area of over three-quarters of a million dollars a year—and we get this figure by dividing the potential by three when compared to the actual value of fisheries in the upper North Platte.

On this basis, we might say that the Casper area has lost an industrial potential of $15 million in 20 years' time through failure of Federal, State, and local agencies to plan ahead for proper water use and proper, standard minimum flows.

Besides not receiving the benefits of this $15 million, the municipality and its industries have had to make expenditures for water purification and supply, expenditures which planning would have reduced or eliminated.

But monetary losses are not the whole picture. Were this stretch of the Platte clean and productive, Casper residents could have enjoyed some 150,000 fishing outings along the river each year. The recreation and, consequently, the delinquency problem would have been reduced.

The proposed and approved $700,000 Gray Reef Dam would not have been necessary had the problems of all agencies been given proper consideration when the dam program was initiated on the North Platte River.[1]

Casper and the Platte River are the prime example, but there are other instances on other streams which, in the aggregate, probably far exceed Wyoming's losses on the Platte. Two further examples, offered as indications of problems common to many Wyoming streams, are the Shoshone and the Laramie Rivers.

Shoshone River.—Pollution in the Shoshone River is both natural and introduced. Of the 56 miles in the study area, 4 miles of stream have been eliminated for fishermen by the presence of sulfide-bearing hot springs which maintain

[1] Reference, Wyoming G. & F. Fisheries Report, 255–5–2, Evaluation, North Platte River Water Flows.

constant toxic level of sulfides in the river. The maintenance of fisheries in 46 additional miles of stream has been seriously impaired by (1) manipulation of water in the river to fulfill irrigation commitments and the return of this water as waste waters; (2) the addition of domestic sewage to the river by the towns of Cody, Powell, and Lovell; (3) effluents from two oil refineries in the immediate vicinity of the river; (4) seasonal effluents from a beet-sugar refinery; and (5) continual effluents from an oil-production field located at Byron, Wyo.

Laramie River.—Development of a fishery in the Laramie River below the town of Laramie has been restricted by two factors—pollution and fluctuation in waterflow. The pollution in the river stems from three sources—(1) the discharge of domestic sewage from Laramie's municipal sewer, (2) periodic flushing by high water and continual leeching of the Laramie tie and timber waste creosote sump, and (3) waste waters, etc., contributed by the Union Pacific rail yards. The water fluctuation is caused by high runoff in the spring which inundates much of the surrounding countryside and the large number of irrigation diversions which reduces the river to a very small flow during the late summer and fall.

Whenever we bring up arguments about the consumptive use of irrigation water, we are reminded that much irrigation water is returned to the streams by irrigation return flows. We feel that a check of the past and present chemical compositions of rivers—like the South Platte in Colorado—which have long been subjected to such situations will show a big increase in alkalinity. In some cases this is so great as to eliminate many game-fish species.

Many of the pollution problems existing in Wyoming could be mitigated through established minimum releases from existing water impoundments to serve as diluent flows to maintain water quality at the minimum need to sustain fish, waterfowl, and other wildlife. Cooperation between the Bureau of Reclamation and polluting industries could serve to coordinate maximum releases of pollutants and maximum water releases.

It is necessary, gentlemen, that we return again and again to these matters of cooperation and mutual planning and a legal means of enforcing cooperation and planning simply because they do not exist to the necessary extent under Public Law 732 and the present attitudes of the Bureau.

We recognize that fish and game interests cannot stand in the way of industrial or agricultural development where it is needed, but, on the other hand, we cannot afford to stand idly by and watch the elimination of irreplaceable natural resources where it is not necessary. Every such project must be judged on its own merits, and in its planning efforts must be made to establish a site which will be least damaging to all interests concerned. In any event, these dams must be determined to be in the best public interest. We ask only that fish and wildlife and their correlated recreational and economical aspects be given their full and due considerations in water projects that may be initiated or considered in Wyoming. Public Law 732 is not adequate to insure such consideration.

Gentlemen, our remarks have been limited for the most part to rather specific examples. We have done this in the belief that a fairly close look at a few definite problems might serve to help focus attention on the broad underlying problems encountered in greater or lesser degree in all water-use projects. We have not intended to be negative in our approach. Rather, we want a bright spotlight on these problems in order that their causes may be eliminated, thus helping to clear the way for progressive future use of our State's and Nation's waters.

Because of our past experience, both preceding and following Public Law 732, it seems imperative to establish realistic and effective joint planning, study, and review of all water projects. It is mandatory that consideration be given to local and national problems, on the one hand, and to realistic joint use, on the other hand.

Therefore, because lasting precedents will be established through the existence of the Senate Select Committee on National Water Resources, we would like to see machinery established to guarantee cooperative, joint, multiple-use planning in all water-use projects now.

We would like to see:

1. State councils of State agency representatives in each reclamation State for the purpose of receiving, reviewing, and making recommendations on all proposed water projects within a given State. Such a committee would, further, act as a joint controlling agency with the Bureau of Reclamation to draw up a set of procedures to avoid needless loss of fish, wildlife, and recreation values through inconsiderate flow reductions and stoppages. A similar control is legally proper, since by Wyoming law the State owns the water.

2. We would like to see a national committee formed of representatives of State committees and appropriate Federal agency representatives with the legal and factual function of reviewing and making recommendations on all proposed Federal water projects prior to any fund appropriations and for final review before construction grants are made; such reviews on each proposal to be submitted to the appropriate legislative committees.

It is felt that some similar structure for cooperation and control is necessary, since government by Reclamation is not necessarily government as desired by our local communities or our State, and since the provisions of Public Law 732 daily become more inadequate for the job of guaranteeing real, joint, multiple-use on water projects.

Again we would like to emphasize that we recognize the need for further activity; that we endorse and support thoroughly planned, necessary projects. We reiterate that we are unalterably opposed to the many uncoordinated projects which not only fail to conserve the resources on which all wealth is based, but which are sometimes actually destructive of irreplaceable resources. Conservation and resource management dictate the future course of our Nation. One bureau, staffed basically with engineers, is not to be relied on to direct our economic and physical destiny.

Senator McGee. Now, the next witness is Mr. R. A. Hakala, county assessor, Carbon County, Wyo.

STATEMENT OF R. A. HAKALA, COUNTY ASSESSOR, CARBON COUNTY, WYO.

Mr. Hakala. Mr. chairman and members of the committee, I am R. A. Hakala, county assessor, Carbon County, Wyo.

I have submitted my written statement, sir, and I will take a brief half minute to hand the copy of the statement to the clerk and make this brief statement.

Land and water are our most important resources and the ultimate useful redevelopment of them will make the State materially strong.

I will defer with that and pass on to the next witness.

Thank you, sir.

Senator McGee. Thank you very much. Your statement will be in the record intact.

Mr. Hakala. Thank you.

(The prepared statement referred to follows:)

OFFICE OF COUNTY ASSESSOR,
Rawlins, Wyo., October 6, 1959.

Hon. GALE McGEE,
U.S. Senate, Washington, D.C.

DEAR SENATOR McGEE: In conjunction with the Senate subcommittee hearing to be held in Laramie at which I hope to attend, I wish to submit a few remarks in support of water development in the West and more particularly in Carbon County, Wyo. If our county is to develop and grow, it is almost mandatory that the vast arid regions, with which we are so familiar, be put to a better use than is the situation at the present time.

The land itself is fertile and all we need here at this time is more rainfall, and since that is not our province, the second alternative is the development of what we already possess, namely, the water resources of our county.

Carbon County, Wyo., with an area of 8,007 square miles, is located in the south central part of the State, and has a population of approximately 15,750 persons, or less than 2 per square mile of area. About four-fifths of the county is arid, and the remainder is high mountain country with some forest land, where numerous streams originate, which in turn feed the North Platte River drainage east of the Continental Divide, and the Colorado River drainage west of the divide. Very little of the water which rises in the county is used within the county.

Of the 5,125,000 acres in the county, the Federal Government owns 2,750,000 acres, or 53.7 percent, of which 631,000 acres lie within the boundaries of the

Medicine Bow National Forest. The State of Wyoming owns 381,500 acres in Carbon County, leaving a balance of 1,995,000 acres which are privately owned, and from which the county of Carbon derives a large portion of its revenue. For the purposes of this paper, we shall call this area 2 million acres for reasons of simplicity, and this is the land with which we are concerned at this time.

Of the 2 million acres, only 136,080 acres are classified as irrigated land. This class covers the land which has a reasonably adequate supply of irrigation water, but does not include those lands which have a water right, but for which no water is available. The vast bulk of the remaining land, or about 1,822,000 acres, is classified as grazing land. Without water, the land has a sparse cover, and it is not unusual to find many areas with this type of land carrying the lowest classification with enough forage to sustain about seven head of cattle per section for a year. Whereas, if water were available for this land, its carrying capacity would be increased tenfold, and probably, twentyfold.

In viewing the economic aspects of the present situation, we find that 6.8 percent of the land on the tax rolls of Carbon County pays 41.4 percent of the county tax. If it were possible to increase the irrigated acreage of the county, it is apparent that our revenues would increase materially, our towns would once again begin to prosper, new people would settle here, creating new wealth, and it would be an inducement for our children to stay here instead of moving away to places where opportunities are greater.

Respectfully submitted.

R. A. HAKALA.

Senator MCGEE. Next is Mr. Russ Beamer, speaking for the Wyoming Mining Association.

STATEMENT OF R. W. BEAMER, EXECUTIVE SECRETARY, WYOMING MINING ASSOCIATION

Mr. BEAMER. Gentlemen of the select committee, I am R. W. Beamer, executive secretary of the Wyoming Mining Association, with headquarters at Riverton, Wyo. The Wyoming Mining Association, an organization of mining companies, service companies, and individuals interested in mining, respectfully submits the following statement relative to the utilization of water in Wyoming.

The extent of water resources of Wyoming is a matter of record. Our State contributes water to several drainage basins and, by compact, other States have established claims to specified shares of this water.

Your select committee is interested in learning more about the water requirements to meet our future needs. As we see the problem, it is difficult for anyone to state what the future needs will be. As an agricultural State, Wyoming is endeavoring to develop a sound and diversified economy. The mining industry is expanding. We hope to see a number of industries established which can utilize these natural resources. We have unexcelled scenery to offer to tourists and vacationers. All of these phases of our economy must be considered in planning for the water needs of the future.

No one can estimate the needs of the mining industry at any particular time. There are too many variable factors which can have a bearing on the rate of growth of this industry. We trust, however, that any plans for water development will have sufficient flexibility to permit meeting these needs as they arise.

During the past several years, the Columbia-Geneva Division of the United States Steel Corp. has made plans for the mining of taconite deposits in the State. The water requirements for this operation have been met through cooperation with our State agencies.

To us, this appears to be the most logical way of handling such problems.

It is our recommendation that the State have full responsibility for the water within its border. Such an arrangement permits the people of the State to make adjustments to meet changing conditions. We are opposed to the efforts of Federal agencies to assume control over waters on lands held by the Federal Government within the boundaries of the State.

We do not look with favor on Federal planning for the utilization of our water resources. Such planning tends to discourage local initiative to work out our economic destiny. It would tend to place our State in an economic straitjacket.

Some of our people are concerned by the zeal of the Bureau of Reclamation and other Federal agencies to utilize all available water for agricultural purposes. We believe that all such proposals should be approved by our State agencies to make certain that adequate consideration is being given to other economic uses for these water resources.

Too great an emphasis on any one use for a water resource may prove detrimental to the growth of a sound and diversified economy.

We respectfully urge that your select committee give full recognition to the State water rights which we consider a part of our heritage. The attitude of Congress on this subject is vital to our economic welfare and to the development of our resources. We trust that we may continue to encourage local initiative in the determination of our economic future.

In conclusion may be express our appreciation for this opportunity to present our viewpoints before your Select Committee on National Water Resources.

Thank you very much, gentlemen.

Senator McGEE. Thank you very much, Mr. Beamer.

Are there any questions from the committee?

We appreciate your testimony.

Now, Mr. Kenneth Sturman, speaking for the State soil- and water-conservation committee.

STATEMENT OF KENNETH STURMAN, A REPRESENTATIVE OF THE WYOMING STATE SOIL AND WATER CONSERVATION COMMITTEE

Mr. STURMAN. Mr. Chairman, members of the select committee, my name is Kenneth Sturman. I live in Cheyenne, Wyo. It is my pleasure to appear before the Senate Select Committee on National Water Resources as a representative of the Wyoming State Soil and Water Conservation Committee, which comes under the Wyoming State soil- and water-conservation law.

I am the secretary-coordinator to the committee.

We do have a more detailed written statement to present to the committee. However, there are two major considerations that I will discuss briefly.

1. One of the committee's important jobs is to consider and either approve or reject applications from local groups requesting assistance

under the Watershed and Flood Prevention Act, Public Law 566. At this time we have approved 11 applications for assistance.

Senator YOUNG. How many applications do you have pending?

Mr. STURMAN. I will come to that, sir.

2. Applications for assistance. The structural work on the one project has been completed and the work plans are nearly completed on two more.

Of the eight remaining approved applications for assistance there is a total of approximately 45,000 acres of presently existing irrigated land that needs supplemental water development to stabilize the existing ranch units. This would involve additional storage of 65,000 to 80,000 acre-feet of water. With the planning assistance now available, some of these projects will not be planned from 4 to 5 years, due to having a joint watershed planning party with Montana. It is the thinking of the State soil and water conservation committee that both Wyoming and Montana should have a separate planning party to carry out this work at a greater increase.

This will bring to your attention the serious need for additional personnel in the planning stages of watershed development in this State.

Our second point is the serious need for additional research information pertaining to proper soil and water management.

The State soil and water conservation committee strongly endorses Senate Document 59 sponsored by Senator Carl Hayden during the past Congress.

This is the short, brief report from the State soil and water conservation committee and I thank you kindly for your time and consideration.

Senator MCGEE. Thank you, Mr. Sturman.

(The prepared statement follows:)

TESTIMONY OF KENNETH STURMAN, REPRESENTING THE STATE SOIL AND WATER CONSERVATION COMMITTEE

My name is Kenneth Sturman; I live in Cheyenne, Wyo.; my address is 308 Capitol Building. It is my pleasure to appear before the Senate Select Committee on National Water Resources as a representative of the Wyoming State Soil and Water Conservation Committee of which I am the secretary-coordinator.

The State soil and water conservation committee consists of six members: the commissioner of agriculture, the State engineer, the president of the livestock and sanitary board, the dean of the College of Agriculture, the chairman of the National Resource Board and the president of the Wyoming State Association of Soil and Water Conservation Districts, all serving by virtue of their offices.

The committee was established to serve as an agency of the State and to perform the functions conferred upon it by the State soil and water conservation laws. In addition to the powers and duties granted under the State laws, the committee is also charged with the responsibility of reviewing all project applications made under the Watershed and Flood Prevention Act of 1954 (Public Law 566, 83d Cong., as amended), and to make such recommendations as are deemed necessary in their report to the Governor for project authorization.

Because it is our duty to coordinate the programs of the several soil and water conservation districts of our State through advice and consultation, and because we have found our work to be more and more involved with the water problems as well as the soil problems of our State, we have come to some definite conclusions:

First, we recognize the fact that soil and water problems are inseparable and that the problems of planning and the use of our water reflects the problems of the soil and the people of our State.

Second, we feel that our State government holds a key position in the development of storage, the use and the control of our water resources and that our

State should take a leading role in the promotion of a consolidated effort toward accomplishing a successful solution to our problems of water management.

I think that we would be presumptuous to say that our State has the total ability and wherewithal to undertake a complete development of our water potential and to find a complete solution to all our water problems. We realize that in many instances only the Federal Government has the capacity to do the job. However, many of our water problems lie within the scope and ability of State or even local groups to carry out a successful solution.

States, particularly our Western States, should actively assist in the coordination of activities of the various Federal, State, and local agencies in seeking a proper solution to the safeguarding of our water resources and we should never lose sight of the desirability of local initiative and responsibility when approaching these problems.

Within the span of our lifetime, our water problems here in the West have increased manyfold. A few decades back, our problems dealt mostly with the management of domestic and agricultural supplies but today, we in the agricultural field, when we stop to analyze our water potential, find ourselves in a competitive position with industrial development, navigation, flood control, municipal usage, power development, mineral development, and recreational and wildlife use.

We recognize the need for multiple usage of our water resources and we have long anticipated the growing problems that are becoming more prevalent each year, but inasmuch as our work is mainly in the line of agricultural and rangeland development, the committee feels we should confine our testimony to this phase of the water problem that we are discussing today.

We now have eight pending watershed projects waiting for action in our State. Wyoming did not have any watersheds authorized under the Flood Control Act of 1944 or under the pilot watershed program inaugurated in 1954.

It was not until passage of the Watershed Protection and Flood Prevention Act (Public Law 566, 83d Cong., as amended) in 1954 that activity in watershed work started in Wyoming. In the fall of 1955, the Lingle-Fort Laramie Soil and Water Conservation District and the town council of the Town of Fort Laramie submitted an application for planning assistance under Public Law 566 which later resulted in the first completed watershed workplan in Wyoming.

Actually, however, it was not until the act was amended in 1956 by the 84th Congress to bring agricultural water management under the terms of the act, that Wyoming was able to make full use of this legislation. Irrigation water shortages, the need for sediment damage reduction and limited flood control are common problems on a number of watersheds in this State. Public Law 566, as amended, appears to fill a need for Federal assistance on medium sized projects larger than those carried out by local groups through their own efforts and smaller than those ordinarily undertaken by the Bureau of Reclamation and other public agencies. Therefore, we now feel that there are a large number of watershed areas in Wyoming which can participate in the small watershed program, under the terms of the amended act.

Because of our late start in this program (as well as Montana's), one watershed planning party was assigned between the two States. Now that our workload and Montana's workload have increased considerably, this one planning party is unable to meet the need for planning assistance.

As of this date, the State soil and water conservation committee has approved 11 applications for planning assistance. The local people in eight of these watersheds are waiting for planning assistance. It would appear that as a result of sharing a planning party with Montana, we now have a 4- to 5-year planning load ahead of us.

Following is the status of applications submitted under the Watershed Protection and Flood Prevention Act (Public Law 566) in Wyoming as of September 28, 1959.

1. Pine Ridge—Case Bier Watershed—near the town of Fort Laramie, in Goshen County, Wyo.: A flood prevention project sponsored by the Lingle-Fort Laramie Soil and Water Conservation District and the town of Fort Laramie. All the structural measures on this watershed have been installed. Dedication was held on June 7, 1959. No storage for irrigation is involved. Temporary floodwater detention storage amounts to 2,768 acre-feet.

2. London Flats—Bovee Watershed—near Lingle in Goshen County, Wyo.: A flood prevention project sponsored by the Lingle-Fort Laramie Soil and Water Conservation District. Final plan approved on January 27, 1959. Local people are now organizing a drainage district to carry out the project. Construction of

structural measures is scheduled to start about May 1960. No storage for irrigation is involved. Temporary floodwater detention storage will amount to 1,016 acre-feet.

3. Angell Draw Watershed, near Lingle in Goshen County, Wyo.: A flood prevention project, sponsored by the North Platte Valley Soil and Water Conservation District. Final plan is in process. Final plan scheduled for completion by October 1959. No storage for irrigation involved. Floodwater channeling and temporary floodwater detention storage of 140 acre-feet involved.

4. Gooseberry Creek Watershed, near Worland in Washakie County, Wyo.: Application approved by State soil conservation committee on December 5, 1958. An agricultural water management type project involving development and storage of supplemental irrigation water. Sponsored by the Washakie Soil and Water Conservation District, the Hot Springs Soil and Water Conservation District, and the Meeteetse Soil and Water Conservation District.

Authorization to proceed with preparation of final plan given by Soil Conservation Administrator on July 28, 1959. When planning can actually start will depend on availability of joint Montana-Wyoming Watershed Planning Party. At present this would appear to be in November or December 1959.

Involves the development of a supplemental irrigation water supply for approximately 3,000 acres and the estimated storage of about 6,000 acre-feet.

5. Bates Creek Watershed, near Casper, in Natrona County, Wyo.: Application approved by State soil conservation committee on December 5, 1958. An agricultural water management type project involving development and storage of supplemental irrigation water. Sponsored by the Casper-Alcova Soil and Water Conservation District. When planning can start with only one joint planning party available between Montana and Wyoming is so remote that no date for starting plan development has been set.

Involves the development of a supplemental irrigation water supply for 3,500 to 7,000 acres and storage of between 8,750 and 17,500 acre-feet.

6. Boulder Lake Watershed, near Pinedale in Sublette County, Wyo.: Application approved by State soil conservation committee on May 20, 1959. An agricultural water management type project involving development and storage of supplemental irrigation water. Sponsored by Pinedale Soil and Water Conservation District and Boulder Irrigation District. When planning can start with only one joint Montana-Wyoming planning party available is so remote that no definite plans have been made.

Involves the development of a supplemental irrigation water supply for approximately 8,000 acres and estimated storage of about 20,000 acre-feet.

7. Teton Creek Watershed, near Alta in Teton County, Wyo.: Also in Teton County, Idaho. Application approved by State soil conservation committee on May 20, 1959. An agricultural water management type project involving improvement of distribution systems and development and storage of supplemental irrigation water. Sponsored by the Teton Soil and Water Conservation District in Wyoming and also by the Teton Soil and Water Conservation District in Teton County, Idaho. With only one planning party available between Montana and Wyoming, preparation of a final plan is probably at least 3 years away.

Involves improvement of distribution systems and development of a supplemental irrigation water supply for approximately 12,500 acres and estimated storage of about 3,500 acre-feet.

8. The north fork of the Powder River Watershed, near Kaycee in Johnson County, Wyo.: Application approved by State soil conservation committee on August 18, 1959. An agricultural water management project involving improvement of distribution systems and development and storage of supplemental irrigation water. Sponsored by the Powder River Soil and Water Conservation District and the Lake DeSmet Soil and Water Conservation District. Sponsors will undoubtedly request that this watershed and the Middle Fork of the Powder River be planned together. Starting on the preparation of a plan is at least 3 or 4 years away.

Involves improvements in distribution systems and development of a supplemental water supply of 3,790 acres and estimated storage of 10,000 to 15,000 acre-feet.

Applications being prepared, and which have not been considered by the State soil conservation committee, but which should be received in time for consideration at the next meeting, are as follows:

9. Middle Fort of the Powder River Watershed, near Kaycee, in Johnson and Washakie Counties, Wyo.: Application will be approved by State soil conservation committee today, October 8, 1959. An agricultural water management type

project involving improvement of distribution systems, and development and storage of supplemental irrigation water. Sponsored by Powder River Soil and Water Conservation District and Nowood Soil and Water Conservation District. Sponsors will undoubtedly request that this and the north fork of the Powder River Watershed be planned together.

Involves improvement of distribution systems and development of a supplemental water supply for approximately 6,000 acres and storage of an estimated 10,000 to 12,000 acre-feet.

10. Upper North Laramie River Watershed, near Wheatland, in Albany County, Wyo.: Application was approved by State soil and water conservation committee on October 8, 1959. An agricultural water management type project which will have to be planned concurrently with the Upper North Laramie River Watershed. Sponsored by the Wheatland Soil and Water Conservation District and the Laramie River Soil and Water Conservation District.

Involves the improvement of distribution systems and development of a supplemental irrigation water supply for approximately 6,000 acres and estimated storage of about 5,000 acre-feet. From the above status report, it is apparent that if we are to keep pace with the application for planning assistance, it will be necessary that at least one full-time planning party should be assigned to Wyoming.

Although these projects are small when viewed individually, in total the applications involve some 43,000 to 47,000 acres of irrigated lands and a total supplemental water storage supply of between 65,000 and 80,000 acre-feet. For the convenience of your committee, a chart is attached to this report which summarizes and totals all the present applications under the Watershed Protection and Flood Prevention Act that have been received to date in Wyoming. No attempt has been made to estimate either the total cost of the above projects or the cost to the Federal Government through Federal participation. Each project must show a favorable ratio of benefits over cost.

Another phase of water development in our State lies in the need for increased soil and water conservation research facilities in Wyoming. On our great mountain and foothill watershed areas, research is needed to determine the best balance between water yields for use in the lower regions and conservation of water on the land for producing livestock forage and for the growth of timber. In the dryland parts of the State, the conservation of moisture for crop production is of utmost importance. Many times, dryland areas of the State have been threatened by consecutive drought years, in which crop failures, shortage of feeds on rangelands, and shortage of water for livestock have caused distress among farmers and ranchers. Studies have shown that in our dryland areas, about 80 percent of the water that falls during the fallow period is lost as far as its utilization for plant growth is concerned. We know that several feet of water annually evaporate from the surface of farm ponds and reservoirs. Our dryland range grasses are inefficient users of soil moisture. Recent research indicates there may be a possibility of increasing the efficiency of moisture for crop production as much as 50 percent or more. We need to implement this research since a saving of water by this method may be much greater than all that stored in all the reservoirs of the State. The cost of research to implement such savings will be much less than the construction of major reservoirs.

Last year, the Secretary of Agriculture held a series of public hearings across the Nation to determine the needs for increased facilities for soil and water conservation research. Recently, the findings of this series of public hearings and investigations have been consolidated into a nationwide recommendation for the improvement of our research program. This summary of recommendations is contained in Senate Document No. 59 of the past Congress under the sponsorship of Senator Carl Hayden. The State soil and water conservation committee, believing in the necessity for immediate improvement of our facilities for soil and water conservation research, wish to endorse the recommendations made in Senate Document No. 59 and recommend that it be given earnest support in the forthcoming legislature.

On behalf of the Soil and Water Conservation Committee of Wyoming, I submit this report on the status of our watershed protection and flood prevention projects and the need for a full-time planning party to be designated for Wyoming, and this statement on the need for improved facilities in soil and water research as a part of the statements presented here today by various groups appearing before this public hearing on water resources.

Water conservation through storage development and through an intensified research program can and does promise a plentiful supply for the foreseeable future. However, we cannot rest on promises on the horizon. Rather, we should strive to find the facts and answers about our water resource development and continue to work through our local, State, and Federal Government to accomplish development of water reserves.

I wish to express the gratitude and appreciation of the State soil and water conservation committee in allowing us to testify before your committee and we pledge our cooperation in the furtherance of your undertaking. We shall be pleased to render any service which will assist you.

Summary—Watershed Protection and Flood Prevention Act (Public Law 566), Wyoming

Name of watershed	County	Temporary floodwater detention	Irrigated land involved	Supplemental irrigation-water storage involved
		Acre-feet	*Acres*	*Acre-feet*
1. Pine Ridge-Case Bier	Goshen	2,768		
2. London Flats-Bovee	do	1,016		
3. Angell Draw	do	140		
4. Gooseberry Creek	Washakie		2,000–3,000	6,000
5. Bates Creek	Natrona		3,500–7,000	8,750–17,500
6. Boulder Lake	Sublette		8,000	20,000
7. Teton Creek	Teton		12,500	3,500
8. North Fork of Powder	Johnson		3,790	10,000–15,000
9. Middle Fork of Powder	do		6,000	10,000–12,000
10. Upper North Laramie	Albany-Platte		1,200	1,200
11. Lower North Laramie	do		6,000	5,000
Total		3,924	42,990–47,490	64,450–80,200

ACTIVITY OF SWCD'S IN WYOMING SINCE 1951

Development of group irrigation storage projects: 26,000 acre-feet of irrigation storage at costs to owners ranging between $10 and $60 per acre-foot.

Installation of major irrigation water control works such as diversion dams and headgates for irrigation districts and companies involving approximately 116,000 acres of irrigated land.

Development of individual irrigation storage projects: 300 individual farm or ranch irrigation reservoirs. Total of about 6,000 acre-feet.

Development of stock water: 5,000 stock-water ponds having storage of about 15,000 acre-feet.

Senator McGEE. Any questions?

Senator YOUNG. Let me ask one question. In the construction of dams do you aim to retain some water or are your dams constructed entirely for flood control?

Mr. STURMAN. It is multiple use, sir. Some for flood protection and some to supplement our present shortage of water.

The CHAIRMAN. Irrigation?

Mr. STURMAN. Additional supplemental water for irrigation. Not for new lands but for the lands that are already irrigated.

Senator YOUNG. About what capacity of the dam is used to hold back water?

Mr. STURMAN. I cannot answer that right now, Senator.

The CHAIRMAN. They are all sizes, aren't they?

Mr. STURMAN. All sizes, yes. There is a limitation on our watershed, 5,000 acre-feet.

The CHAIRMAN. 5,000 acre-feet. Insofar as a local district is concerned under 566 but greater than that if the conservancy district such as irrigation or municipality comes in on the deal?

Senator YOUNG. What I was trying to get at, in my State the dams constructed almost entirely are to hold back water for flood-control purposes and the water is drained out almost immediately and little water is left in the dam, which I think is a mistake.

Mr. STURMAN. Sir, there are cases where it must be for flood prevention only because it will not hold water. That is the one that we have practically completed to date and that is strictly flood prevention and it would not hold water if you wanted it to.

Senator YOUNG. You have both types?

Mr. STURMAN. We do have both; yes, sir.

Senator MCGEE. Thank you, again.

Now, H. T. Person, dean of the College of Engineering at the University of Wyoming and key architect in most of our interstate water compacts, was scheduled to testify next. He has just sent word that he will have to submit his statement for the record and I ask permission that it be included in the record at this point.

Senator YOUNG. Mr. Chairman, may I say now that I had the privilege and honor of serving with Dean Person on the Missouri Basin Survey Commission appointed by President Truman. I think he is one of the most able and best informed people in the entire area on soil and water problems. He made a great contribution to that survey.

Senator MCGEE. Believe me, Senator, he is our water genius here.

Senator YOUNG. He is a good one.

Senator MCGEE. I have a letter here from the Jackson Hole Chamber of Commerce wishing to insert in the record a statement that is en route by mail. Apparently it is so heavy it could not come by first-class mail with the letter. It affects the water question of interest to Jackson Hole and Snake River.

I ask that it be made a part of the record.

(The statement referred to follows:)

TESTIMONY OF WALTER W. KING, SECRETARY, JACKSON HOLE CHAMBER OF COMMERCE

My name is Walter W. King and my address is Jackson, Wyo. I appear here today representing the Jackson Hole Chamber of Commerce, of which I am the secretary; the Jackson Hole Chapter of the Izaak Walton League of America, Inc., of which I am the secretary. I am a member of the Wyoming Travel Commission.

The Jackson Hole Chamber of Commerce represents the business interests of Jackson Hole merchants as well as agricultural interests.

Water is necessary for man's very existence. Teton County of Wyoming is one of the largest water-producing areas for its size in the entire world. Jackson Hole is drained by the Snake River, which flows south, thence west, and then north to the Columbia River. The Snake River is one of the largest of the tributaries to the Columbia River. The Minidoka reclamation project gets its water from Wyoming, although the project is within the State of Idaho. Many years ago, as early as 1904, this project was being developed. Today there is a dam at Jackson Lake, which is now wholly within the boundaries of Grand Teton National Park, that impounds the waters of the Snake River, and the control of this dam rests with the water commissioner of the Minidoka project.

Planning for use of the waters of the Snake River drainage within Teton County, Wyo., has not been given careful consideration with a view to the use of these waters by the State of Wyoming. It is our position that the Congress must reaffirm the right of the States over the use and control of water within its borders. This and the other hearings that will be held by this committee will be meaningless without congressional action in solving this basic problem by the reaffirmation of water rights.

Teton County, in which is located Jackson Hole, is confronted with a basic problem which we feel should be of major concern to this committee. Teton County is a high mountainous area of northwestern Wyoming, which is dominated geographically, historically, and economically by its inclusion of the Teton Range. For mountain scenery it surpasses any other area in the United States and competes well with any in the world.

The future of Teton County, and more especially Jackson Hole, lies with the vacationing millions of America.

The scenic beauty of Teton County is not manmade, but rather is the gift of the Omnipotent.

The Congress of the United States has seen fit to preserve much of this northwest Wyoming area by creating the Yellowstone National Park, the Grand Teton National Park, and bringing within the supervision of the U.S. Forest Service many other thousands of acres of timbered mountainous areas. Less than 4 percent of Teton County is in private ownership. Certainly because nearly all of the lands are in public ownership does not give the Corps of Engineers nor the Bureau of Reclamation a preference right to enter upon these public lands and to serve their whims and purposes build dams of varying sizes all over Teton County and more especially in the drainage area of Jackson Hole. To permit them to do so will but destroy this great area which must be preserved for the recreation of our ever-growing population.

There entered Jackson Hole in 1950 approximately 189,000 persons whose sole objective was recreation. In 1958 more than 1,400,000 persons bent on the same objective visited Jackson Hole, and in this present year of 1959 more than 1,400,000 persons had visited Jackson Hole by September 11, 1959. It is expected that a total of more than a million and a half will be recorded as visiting Jackson Hole this year. It is anticipated that as many as 1,650,000 will be visiting this scenic wonderland in 1960.

Northwest Wyoming and especially Teton County is right in the midst of the biggest growing "industry" in the world of today, tourism and recreation. Recreation has an intangible value but with our tremendous increase in population we must provide areas for the vacationer. There is a place for the manmade recreation facilities such as those at Hoover Dam, but there are all too few areas having the scenic wonders of northwest Wyoming and where man can enjoy nature as God gave it to us.

There are those who place a monetary value upon our rivers, canyons, and scenic beauty. This has been the case with the U.S. Corps of Engineers and the U.S. Bureau of Reclamation in their desire to impound the waters of every stream in Jackson Hole, giving little, if any, thought to the destruction of our wildlife.

Attention of this committee is directed to investigations and surveys that have been made during the past 30 years of the streams in the Snake River Drainage. In 1939 it was proposed that a dam be built at Johnny Counts on the Snake River 8 miles south of Jackson. These investigations and surveys have continued until the present. In 1944 Johnny Counts was abandoned and it was proposed that a dam be built at the narrows in the canyon of the Snake River 4 miles east of Alpine. Investigations and surveys covering 20 separate sites within Jackson Hole have been made either by the Corps of Engineers or the Bureau of Reclamation. Eight other areas have been encompassed within the Snake River drainage.

Surveys made by the Fish and Wildlife Service, Bureau of Sport Fisheries, show clearly that there would be but one result as to our wildlife—namely almost total destruction. It would appear that neither the Corps of Engineers nor the Bureau of Reclamation have any regard for the recreational values now existing or for the preservation of our wildlife.

It is the case that the State of Wyoming through its 35th legislature, is on record with a memorial to the Congress, that the State is opposed to the construction of a dam in the narrows of the Snake River in the State of Wyoming.

It has already been stated by Mr. Milton Coffman, a member of the Wyoming Natural Resource Board, that we cannot continue on a piecemeal method of development with the many State and Federal agencies going their separate ways without putting each individual proposal and activity in its proper perspective. We must have cooperation and coordinated effort on the part of all concerned.

It is but a short time past that the Forest Service sprayed some 10,000 acres within the Bridger National Forest for the purpose of destroying all vegetation. The area now looks like a desert. It would appear that little, if any, thought

was given to the preservation of wildlife in the area. Without the willows the moose have departed. With all vegetation destroyed the beaver have departed and this finest of engineers is no longer there to build dams to prevent excessive runoff. There is nothing left for the deer and the elk. What was the purpose of this killing of the existing vegetation? The Forest Service says that it was so reseeding could be done and produce forage for the cattle ranchers. This is but an example of failure to coordinate the activities of one Bureau with another.

It is the belief of us in Jackson Hole that proper inventory of the water resources of Wyoming must be made. Redistribution of water through the State should be put into proper perspective. Continued investigation and research must be made relative to the management of our watersheds. Overgrazing must be stopped; erosion must be controlled; reforestation of burned-over areas must be done; needed improvements must be made throughout. Research and soil surveys are needed.

To do these things and all of the many other problems that must be given attention and solved will require careful planning and management in cooperation with all State and Federal agencies. As for Teton County and Jackson Hole its natural state must be preserved for the coming generations as a place for recreation and the fulfillment of a better life for mankind.

Senator McGEE. I have here a wire from Bob Larrimore from Gillett who was planning to appear and testify today. A ranch fire last night, he explains, prevents his coming down this morning.

We have from Mr. D. E. Hunton, Wheatland, a short, pungent statement on the water question affecting Wyoming. I ask that it be made a part of the record.

(The prepared statement referred to follows:)

WHEATLAND MOTOR CO.,
Wheatland, Wyo., September 16, 1959.

Hon. GALE W. MCGEE,
U.S. Senator,
Washington, D.C.

MY DEAR GALE: Your general letter to Wyomingites regarding the Senate committee hearing on national resources to be held in Laramie October 8, 1959, occasions this letter.

Having lived in Wyoming all my life I am fully aware of the vital effect water has on our economy. I have worked on water problems from a local level for several years. One fact stands out: we just do not have enough water in the eastern part of this State for Wyoming.

The Green River in western Wyoming has approximately 1,014,000 acre-feet of water belonging to the State that is not being used in our State at the present time; a great portion of this is going to California. This is a very serious situation. The Supreme Court of the United States in rulings of 1912 and 1922 allowed Colorado to continue to divert water from the Laramie River to Colorado on the grounds that Wyoming failed to show need; therefore, Colorado should keep the water on the arounds of precedent by use.

A large portion of the Green River water can be diverted to the eastern part of this State, which would stabilize the Wheatland irrigation project—one of the oldest, if not the oldest in the State. The fertility of this area has been proven and the 50,000 to 75,000 additional acres that can be developed by such a diversion (just as good land as in present project) are vital to the State's economy. It therefore appears that yours and our beloved Senator O'Mahoney's efforts should be directed to being sure that Wyoming does not lose this Green River water, if a Bureau of Reclamation survey could be started it would show intent and need.

I realize this to be very inadequate as to what you will need as regards facts and figures also of Congress concern over today's agriculture surpluses. But do not forget tomorrow's shortages occasioned by population increase and many other economic factors, and if I may be of help in getting this subject set up for hearing, please advise.

I feel that making water a political issue is a serious mistake—it is far too vital to be subjected to political whims.

Sincerely,

D. E. HUNTON.

Senator McGee. Now, the next witness is one of Laramie's most distinguished ranchers and leader of livestock industry in Wyoming, Mr. Oda Mason.

STATEMENT OF ODA MASON

Mr. Mason. Thank you, Senator, for that remark.

Mr. Chairman and members of the Senate Select Committee on National Water Resources, I am Oda Mason, a member of the Wyoming Livestock and Sanitary Board, a past president of the Wyoming Stock Growers' Association I have been an irrigator and cattleman on the Laramie River for over 60 years. I am making my statement on behalf of the Wyoming Live stock and Sanitary Board, and myself as a water user who has water rights under Wyoming law.

We are not submitting data on proposed water-development projects, since we are sure the many potential developments in the State of Wyoming will be presented to the committee by State and Federal agencies, whose job it is to investigate such developments.

There are some matters so important in connection with the orderly and full development and use of the State's water resources that we are taking the time of the committee to get them on the record.

In Wyoming we have, for over 70 years, operated under the principle that the State of Wyoming has the authority to regulate the appropriation and use of the water of our streams. All rights to the use of water in the State of Wyoming are obtained from the State. Over the years Federal agencies operating in Wyoming have recognized the rights and laws of the State relating to the appropriation and control of the use of the waters within the State's boundaries. When the Bureau of Reclamation builds a project in Wyoming, they obtain a right to use the water under the Wyoming law. Wyoming's whole agricultural economy rests on water rights established under Wyoming's laws.

Today, because of court decisions and stands taken by some Federal agencies, there is uncertainty in regard to the validity of the concept of Wyoming's water being controlled by Wyoming. With this uncertainty, it seems to me—it is less than useless to talk about water-resource developments. In fact, we don't even know if our present water rights are any good.

We appreciate the fact that the Congress is now considering something over a dozen bills on the matter of States water rights. We feel that the most important first step—in connection with the development of the Nation's water resources—is Federal legislation—that will for once and for all—settle that the States do have the authority to regulate the appropriation and use of their waters—and that Federal agencies operating in the States shall comply with the States water laws.

Another factor that is important in connection with the full development and utilization of our water resources is the wilderness legislation which is now being considered by Congress. This legislation, unless it definitely and clearly provides for multiple use of our resources, could have a very detrimental effect on the development of the water resources of the West. Such legislation cannot make wildlife and recreation preferential uses, without jeopardizing the future develop-

ment of the West and the Nation. Unless we want to tie up forever food-, timber-, and mineral-producing resources that we are going to need in the future for survival, the so-called wilderness legislation should be such as will provide for multiple use, including timber production, grazing, mineral production, water development, recreation, and wildlife, without giving one or two of these uses a preferential status over the other uses. I am in complete agreement with Senator O'Mahoney, that we should hesitate to "lock up" these natural resources upon the plea of "preserving a wilderness."

Another matter that we feel is of real importance to Wyoming in connection with water development is a program that will provide supplemental water for lands that are now irrigated. Today there are close to a million acres of land irrigated in Wyoming that face serious water-supply shortages in low-flow years and/or during the latter part of the irrigation season. The Federal small-projects loan legislation was a step in the right direction. Unfortunately our experience in Wyoming with this program has not been too good. The detailed feasibility reports and redtape that are required in connection with an application for a loan under the small-project program, are such that the costs of the reports and redtape will probably be more than the cost of the supplemental water. We feel that the only reports that should be required in connection with an application for a small-projects loan for a small supplemental water-supply project, for an entity with an established agricultural economy, should be reports that establish the ability of the loaning entity to repay the loan.

I thank you.

Senator McGee. Thank you very much, Mr. Mason.

Are there any questions?

Thank you.

Now, Mr. Lee Keith, former speaker of the Wyoming House of Representatives.

STATEMENT OF LEE KEITH, PRESIDENT, WYOMING DEVELOPMENT ASSOCIATION

Mr. Keith. Mr. Chairman and members of the Senate select committee, I realize that your time is very short. I have already submitted my testimony which consists of a written statement and three resolutions passed at the Wyoming Development Association annual meeting held last Tuesday.

I will delete most of that and second primarily what Mr. Oda Mason said.

We hope you can pass legislation guaranteeing the States the right to regulate the water within their borders.

The second resolution concerning wilderness areas I will not dwell broadly on. It is our thinking in the Wyoming Development Association that perhaps these wilderness areas are desirable and good for the people of the United States. Large tracts of land adjacent to the large centers of population should be purchased and returned to the wilderness state, thereby guaranteeing the right of more people to these wilderness areas and doing more good for the children and youth and people of those areas where they are needed.

The other resolution that I had to offer was the one concerning the Small Projects Act, and I second there the statement of Mr. Oda Mason, and we hope that you can cut down the detailed feasibility report and finally wind up with something that will guarantee the ability of the bargaining agency to repay the cost of the loan.

I thank you, gentlemen, for your time and you are most kind to come to Wyoming and hear us in our problems.

(The statement and resolutions referred to follow:)

STATEMENT OF LEE KEITH, PRESIDENT, WYOMING DEVELOPMENT ASSOCIATION

Mr. Chairman and members of the Senate Select Committee on National Water Resources, I am Lee Keith, president of the Wyoming Development Association, and a water user on the Powder River in Johnson County for the past 30 years. I am making this statement in behalf of the Wyoming Development Association.

The Wyoming Development Association has been, for over 25 years, interested in development and beneficial utilization of the water resources for the State of Wyoming. I am including for the record three resolutions that were adopted at the annual meeting of our association in Casper last Tuesday. We feel that the matters covered in these resolutions are most important in connection with the future industrial and agricultural development and use of the water resources of Wyoming. I won't take the time of the committee to read the resolutions, but I will just review briefly their context.

Resolution No. 1 concerns itself with the recognition of the rights of States to regulate and control the appropriation and distribution of use of the waters of the States, and we request the Congress to pass the necessary legislation allowing the States to do this.

You may not think that Resolution No. 2 is directly concerned with the use and development of water. However, since it is concerned with the wilderness areas of the State of Wyoming, and within the borders of such areas lies a great portion of the undeveloped and unexplored areas of Wyoming which will largely be the future development areas for water storage and development, and also mineral development, this resolution requests continuous multiple use of these areas. For the future industrial and agricultural development of Wyoming, it seems to us it would be very unwise to tie up these vast potential areas for grazing, minerals, and water development.

It is our thinking in the development association that if wilderness areas are necessary and desirable, that areas adjacent to the large centers of population should be purchased and returned to wilderness state. Such a program would make wilderness areas available to many more people in the country than the creation of such areas in the West.

Resolution No. 5 deals with small projects loan programs. Today there are close to a million acres of land irrigated in Wyoming that have serious water supply shortages in low flow years and/or during the latter part of the irrigation season. In connection with this problem, the Federal small projects loans legislation was the first step in the right direction. Our experience in Wyoming with this program indicates that the detailed feasibility reports that are required in connection with an application for a loan under the program are such that the cost of the reports is too high. It is our feeling that the only report that should be required in connection with an application for a small projects loan for a supplemental water supply for an entity with an established agricultural economy should be such report or reports as are needed to establish the ability of the borrowing entity to repay the loan.

I thank the committee for the privilege of appearing before you gentlemen to present our case.

RESOLUTION NO. 1—FEDERAL RECOGNITION OF STATE WATER LAWS

Whereas the recognition by the Federal agencies of the rights and laws of the States relating to the control, development, appropriation, and use of waters within the State's boundaries is one of the fundamental concepts of Wyoming law and of the reclamation law as stated in section 8 of the Reclamation Act of 1902; and

Whereas at the present time, there is uncertainty in regard to the validity of this fundamental concept of State and Federal law: Now, therefore, be it

Resolved, That the Wyoming Development Association support the passage of Federal legislation to recognize the rights of States to regulate and control the appropriation, distribution, and the use of waters of the States, and to require compliance with such laws by Federal agencies and their licensees; and be it further

Resolved, That copies of this resolution be sent to Wyoming's congressional delegation and to the Governor of Wyoming.

RESOLUTION NO. 2—WILDERNESS LEGISLATION

Whereas bills have been introduced in the last two sessions of Congress to establish a national wilderness preservation system; and

Whereas these bills would create wilderness areas in Wyoming; and

Whereas the creation of such wilderness areas would interfere with the development of the State's water resources and would jeopardize the multiple use concept of the areas for the production of water, forage, timber, minerals, and recreational opportunities, which multiple use concept policy has been in effect for over 50 years and has shaped the economy of the West: Now, therefore, be it

Resolved, That the Wyoming Development Association goes on record as opposing the creation of wilderness areas in Wyoming; and be it further

Resolved, That the association recommends that if such wilderness areas are necessary and desired, that areas adjacent to centers of population be purchased and returned to wilderness state. Such a program would make wilderness areas available to many more people of the country than the creation of such areas in the West; be it further

Resolved, That copies of this resolution be sent to the Wyoming congressional delegation and the Governor of Wyoming.

RESOLUTION NO. 5—SMALL PROJECTS LOANS

Whereas it has been the experience in Wyoming that the detailed feasibility reports required in connection with the application for a Federal small projects loan are such that the costs of such feasibility reports are clearly out of proportion to the cost of many small supplemental water supply projects in Wyoming that could benefit from such a loan program; and

Whereas for small supplemental water supply projects for an entity with a going and established agricultural economy, the detailed and costly feasibility studies which are necessary for large new projects, and not needed to establish the ability of the loaning entity to repay the loan: Now, therefore, be it

Resolved, That the Wyoming Development Association goes on record as recommending that the feasibility reports required in connection with an application for a Federal small projects loan for a small supplemental water supply project be only such as are needed to establish the ability of the loaning entity to repay the loan; and be it further

Resolved, That copies of this resolution be sent to the Secretary of the Interior, Wyoming's congressional delegation, the Governor of Wyoming, and the Wyoming Natural Resource Board.

Senator YOUNG. Mr. Chairman?

Mr. KEITH. Yes, sir.

Senator YOUNG. I would like to say this. I think this question of State's water rights will come to a head before long. For example, in my State we are trying to get an irrigation project now. After storing all of the water that we can, back of Garrison Dam, 23 million acre-feet under the loan plan, the Army Engineers and the Bureau of Reclamation estimate there is enough water for all these multiple purpose, but at least one Governor in the lower Missouri Basin has registered opposition to any diversion of water out of the Missouri River. This question will come to a head before long.

I certainly strongly favor a State's rights position on it. I think there is enough water to meet all of the needs but certainly we who furnish the water and store the water ought to have some right to it.

Mr. KEITH. Yes, sir. I agree with you, Senator.

Senator MCGEE. Thank you very much, Mr. Keith.

Mr. KEITH. Thank you gentlemen for the privilege.
Senator MCGEE. It is almost time that we recess.
Now, the next witness is Mr. John M. Hill.
John, are you here?

STATEMENT OF JOHN M. HILL, CIVIL ENGINEER

Mr. HILL. I will submit mine in writing.
Senator MCGEE. Would you care to file your statement?
Mr. HILL. Yes.
(The prepared statement referred to follows:)

STATEMENT OF JOHN M. HILL, CIVIL ENGINEER

TWO POINTS TO CONSIDER IN PREPARING FOR LARGE DAMS

1. *The technical and moral urgency for saving water early.*—If our country debates and stalls around for 10 years before building some big reclamation reservoir, we may miss, for 30 years or altogether, our chance to fill it. With the tighter restrictions and fuller use of water in each major river basin, we might just miss the boat forever, in this fashion:

(*a*) Say we finally agree that the Echo Park Dam (or the Yellowtail Dam) is a good thing and will be built.

(*b*) Meanwhile, say we have had a wet spell, 2 or 3 or 4 years long in which we could have filled the reservoir with flood runoffs—if the dam had been ready.

(*c*) Say that we now build the dam but come on a period of 8 dry years and can't fill the new reservoir due to downstream commitments.

(*d*) Now suppose that the total irrigation use develops more fully during that dry period, so that the next flood, when it comes, may not be available for filling this reservoir.

(*e*) And disputes over filling schedule might conceivably prevent its ever getting filled thereafter.

(*f*) This does not mean that this reservoir was one too many on the river. It means that it should have been there 10 years sooner to catch the other flood for its initial filling. That flood was dumped in the ocean—remember? In other words, a flood in the hand is worth two in the bush.

The above I call technical urgency for getting these big dams built, if they look reasonable at all. Here is an illustration of the moral urgency for going ahead with them:

Our country is facing power and water shortages. Both of these—not just one—are nationwide. If we let these develop, we may not only have a gargantuan task struggling back out of them, but we will have lost the potential earnings (electricity and farm products) that would have paid for the whole construction and will then be beyond reach. Things that might have been.

So there may be reasons for condemning our way through and saving all this before it is too late. Consider the case of our highways: Traffic has finally jammed them full, in our Eastern and Western and Coastal States. We hear that only California, of all the States, has recognized and has started in on its traffic problem—planning, condemning right-of-way and building, trying to lick the problem before everything gets tied up. There is a moral factor here—vaccinating to prevent an epidemic.

This may even help to set a new style in big contracts such as dams: Paying a contractor a bonus for finishing the job early, since it can then catch those lost floods, and can start earning revenues sooner, through electric power and irrigation.

2. *Do reservoirs really harm anybody?*—As a young engineer-surveyor on the Casper-Alcova reclamation project, I used to hear dire predictions from the natives of Rawlins and Casper, Wyo. They said the two new reservoirs would ruin the beautiful Seminoe and Alcova Canyons. Now they say there is nothing prettier, more enjoyable, or more useful than Seminoe Lake or Alcova Lake.

And I think even the dinosaur bones in Echo Canyon on the Colorado River could be saved for posterity before any reservoir flooded them. They could be dug up in layers during the next 3 years. They could be carefully cataloged as

exposed, while each layer was being photographed from an airplane or from the opposite canyon wall. Photogrammetry is accomplishing marvels these days. It is being used to record the undisturbed position of artifacts in the tombs and houses of Pompeii. It could be used to speed up (and possibly improve) archeology in Echo Park.

Finally, here is a point that should not be forgotten: At the time that the sincere nature lovers are fighting to save Echo Park for a national park and saying that a dam would ruin it, I notice that Grand Canyon National Park has now been extended to include Lake Mead and the Hoover Dam. Apparently, these things are good for a national park, not bad.

The business of military dispersal of food-growing regions should be considered in reclamation planning, too.

I believe an interested layman can often see more clearly some of the big problems than can the engineers or lawyers who may be too close to the subject. This applies principally in the initial concepts of water planning and again in their final review.

P.S.—We'd better really get going on the problem of how to decontaminate our big reservoirs and rivers if hit by bombs or fallout.

Senator McGEE. Thank you very much.

The next witness will be Mr. Dennis Utter.

STATEMENT OF DENNIS UTTER

Mr. UTTER. My name is Dennis Utter.

As a 20-year-old, a native of Wyoming, and one who would like very much to make his living and raise his family in Wyoming, I come before you as a representative of youth, as a representative of the many others like myself who would like to make their living and raise their families in Wyoming.

We are sincerely grateful to the Senate Select Committee on National Water Resources and to Senator McGee for recognition of the importance of youth for it is my generation that will have to carry out the legislation you expect to recommend to Congress.

We recognize the importance that proper water development will play in the growth and prosperity of our State. It is upon water development that rests the future of agriculture, industry, and the development of one of the richest beds of natural resources in the United States.

The Census Bureau estimates that Wyoming's population will be in the vicinity of 425,000 people by 1980. This is based upon an estimate of the national population ranging between 225 million and 230 million at that date. The Census Bureau further estimates that the population will exceed 300 million people in this country by the year 2000 which will mean another substantial increase in Wyoming's population. If these people are to find jobs in Wyoming, we must expand our economy by developing all of our resources to their fullest extent.

Wyoming's economy at present is based heavily upon the side of extractive industries and agriculture. It is estimated that we will need about 2 million or more acre-feet of water per year by 1980 to provide for the anticipated increase in irrigation needs. We will also need another 23,000 acre-feet of water per year by 1980 for industrial, municipal, and domestic uses. All of this is, if the economy continues to grow only at its present rate.

It is easy for you to see that water is the lifeblood of our economy. Upon it depends the future growth of agriculture and industry and ultimately the prosperity of our State. Upon the development of

our water resources also rests the future of youth. If Wyoming's economy is not allowed to grow by stalemating our water development, then we, the youth, are faced with the prospect of finding our living elsewhere.

By the proper development of water resources, Wyoming's economy will expand and will make use of its tremendous storehouse of natural resources. Proper water development will encourage industry to settle in our State. Proper water development will insure the continued growth of agriculture which is also going to be necessary in order to feed and clothe our growing population.

We are deeply concerned about our future and the future of our State, and we place it in your hands as you make your recommendations to Congress. We ask that we be assured that the water development, which is so vitally necessary for Wyoming's future tomorrow and in 1980, will be integrated with our national water policy.

Thank you very much.

Senator McGee. Thank you, Mr. Utter.

The next witness is Mr. Paul N. Carlin, Laramie, Wyo.

STATEMENT OF PAUL N. CARLIN, LARAMIE, WYO.

Mr. Carlin. My name is Paul N. Carlin, 918 South 15th Street, Laramie, Wyo.

A major question of deep concern to the young families in Wyoming, who intend to settle and prosper here, revolves around the future economic development of our State. It is obvious that the keystone which supports this potential economic growth is a long-range development of Wyoming's water resources.

Wyoming and the Rocky Mountain area are noted as being the "land of snowfalls and beautiful mountain streams." Precipitation in its natural state abounds in this area; however, inadequate development of these water resources has forced numerous cities to impose water restrictions, because of the scarcity of available water for domestic and industrial use.

Traditionally, emphasis has been placed upon flood control and reclamation projects, with irrigation being the major concern. Today these concepts of water development fail to completely meet the demands of the modern West.

If maximum utilization of our available resources is to be achieved, these traditional boundaries which presently corral our water policies must be expanded to include the many new technical advances and particularly to encourage the further expansion of these developmental efforts. Problems such as the reusage of irrigation waters and the desalination of the brackish ground water of Wyoming will pose major questions which must be answered if our economic potential is to be approached.

New technical methods such as cloud seeding, membrane covers for reservoirs, desalting, the application of nuclear energy, and similar improvements must be incorporated into our State and national water policies if these problems are to be solved.

Here in Wyoming, as in many other Western States, vast resources lie undeveloped. With the growth of American industry, the demand for these resources will continually increase. Conversely, in many areas of our country, complex transportation and population prob-

lems are encountered. The obvious remedy is to locate the development of future industry close to the source of the raw materials.

In another vein, our military experts agree with this result, since they warn us that—

* * * the only real defense in a nuclear war will lie in the dispersion of population and production facilities.

Additional statistics reveal that 90 percent of our population growth in the past decade has occurred in 174 metropolitan areas in the United States.

Looking to the future, it is evident that regardless of defense needs, this ever-increasing population concentration will have to be dispersed in order to provide for efficient industrial growth and prevent the evils which result from crowded living conditions. One example of these pressures is the serious juvenile problems currently being encountered in many of our great urban centers.

Senate Resolution 48, which created your committee, indicates that—

* * * authoritative estimates forecast that by 1980 the United States population will increase to two hundred and fifty million and that the use of water will have increased by more than 50 per centum.

Conservative census estimates have placed the State of Wyoming's population of 1980 at 425,000 persons. This growth in Wyoming's population will drastically increase the demands on our already inadequate water reserves.

The younger citizens of Wyoming, with growing families, are already aware of these figures and of the demands that will be placed on our water reserves in future decades.

Concern with this foreseeable water deficiency is shown by a rising anxiety as to the effect that this shortage will have on the economic development and future of our State.

Many young couples in Wyoming have resisted the trend of gravitation toward larger urban centers and have "staked their claims" for a successful future here.

There is widespread confidence in the economic future of this vast State; however, this potential can never be approached unless our vast mineral resources and wide-open plains can be augmented by the development of adequate water resources in a judicious manner.

Many of us who are anxious to develop our careers in Wyoming, and at the same time provide an adequate standard of living for our growing families, are quite concerned over the future economic development of our State.

Realizing that the development of these resources is the key to our own progress and that of the Nation as a whole, I am sure that I reflect the concern of many other young Americans when I ask: "How can we be sure that water-resource-development projects, which are necessary to Wyoming and the intermountain West, will be undertaken?"

Thank you.

Senator McGee. Thank you, Mr. Carlin.

Is there anyone here whose name has not been called that may have been overlooked and inadvertently omitted from the list of witnesses?

Mr. Chairman, it is a pleasure to turn this back to you. You heard the many voices of Wyoming speaking.

I want to say to you personally and to my colleagues that we deeply appreciate your taking the time to hear our cause. We have a deep and moving story and we are glad that you took the time to share this discussion with us.

The CHAIRMAN. Senator—speaking for myself—you have told us much about the great people of Wyoming, their knowledge of their problems, the diversification of their interests, their devotion to the cause of water conservation and utilization. I want to tell you that they have lived up to the fine recommendation that you gave them and it is now abundantly evident as to why you are so proud of them.

I am glad to have been here. I am happy for the committee to have the benefit of these statements and this testimony and to receive the impact. We hope to be the vehicle of the transmission to the Senate of the tremendous interest and the very able grasp that your people in Wyoming have of this problem. [Applause.]

Senator Kuchel.

Senator KUCHEL. Mr. Chairman, I want to paraphrase a political sentence that you and I heard several years ago. I most devoutly believe what is good for Wyoming is good for California. And I am proud to come here as a Senator of the United States, desiring to help my country, of which Wyoming is a proud and important part and of which, if you will permit me to say, my own State is also a proud and important part. There are 50 stars in our flag, there are 100 U.S. Senators in Washington. And I promise that from the hearings which we will hold, of which this is certainly a gem, will come constructive legislation from the Government of our free country to help the people of all 50 States in all the years ahead.

Thank you for letting me participate in your hospitality and your wisdom.

The CHAIRMAN. Fine, Senator. [Applause.]

I must say that I detect a good deal more vigor and buoyancy and vitality in your personality and utterances since the outcome of the baseball game an hour or two ago.

Senator YOUNG. I would like to join in the statements that have been made here. You have had very able witnesses. I think you have presented the problems of Wyoming very well. You made a great contribution to the cause of the work of this committee. It has been a pleasure to have been with you. [Applause.]

The CHAIRMAN. Thank you.

(Whereupon, at 3:20 p.m., Thursday, October 8, 1959, the hearing recessed to reconvene at 10 a.m., Friday, October 9, 1959, in Billings, Mont.)

(Subsequent to the closing of the hearings the following letter and statements were received:)

U.S. SENATE,
SELECT COMMITTEE ON NATIONAL WATER RESOURCES,
December 9, 1959.

HON. ROBERT S. KERR,
Chairman, Select Committee on National Water Resources,
U. S. Senate, Washington, D.C.

DEAR SENATOR KERR: The decision of the Senate Select Committee on National Water Resources to act on my invitation to hold a hearing in Laramie was deeply appreciated. Your presence, Mr. Chairman, as well as that of Senators Kuchel and Young, made the occasion a significant one in the history of our State.

The people of Wyoming have always been and are certainly now interested in the future of their water resources. The record of accomplishment on the part of Wyoming water users gives eloquent testimony to the breadth of their vision where water development is concerned. This interest was further evidenced by the enthusiastic reception which the committee's coming evoked, and also by the extensive preparation which went into the many fine statements which were presented on the day of the hearing.

The purpose of this letter is to place emphasis upon a few of the points which seem to me to have been made forcefully by the various witnesses.

The first point, and certainly, it is not a new one, is that a large percentage of the water available in Wyoming must, if it is to be used, be conserved through storage. When we have worked out a multiple purpose water development program which will conserve even a small additional percentage of the water which falls upon Wyoming each year in the form of precipitation, we will have accomplished the first step toward the building of a more adequate economy for the State.

One of the resources which we have in great abundance in Wyoming is space. We have the room which is needed for America's burgeoning population and industry. We cannot use this room unless investments are made in water development because, after all, water is the foundation, the gage, and the limit of any economy. It is common to speak of the amount of investment which is necessary to create a given number of jobs. We must also think of the amount of water which is necessary to create the number of jobs which will be needed for our young people during coming decades.

After studying the record of the testimony, it is apparent to me that Wyoming's future depends at least as much on development of water as upon the development of other mineral resources which may be extracted from Wyoming's soil. These mineral resources may be depleted some day even though they now exist in such vast quantities as to stagger the imagination. Wyoming's water resources renew themselves each year and, thus, an industrial system which makes the fullest possible use of water will make a more stable contribution to the State's economy in the long run.

Another broad area of concern which was touched upon by many witnesses in many ways during our Laramie hearing was the difficult task of allocating water resources. In the future there will be an increasing demand for this basic resource which even now is in short supply in many areas of our State. Without adequate development we in Wyoming are going to have to make some hard choices as to which of the many possible uses for our water resources will be favored. The point these witnesses were really making is that only a full development of our water, which is adequate to the needs of the number of people and of the industries which will inhabit Wyoming in 1980 and succeeding years, will solve this difficult allocation problem.

If we conserve our water and use it carefully and if we make use of the new supplies of water which modern technology is making available, we will have enough water in Wyoming.

If there is one point which emerges more strongly than any other from the testimony taken at this hearing, it is the determination of Wyoming's citizens that the necessary development will be undertaken. Local, State, and Federal governments have played their parts in the development which has brought us to our present situation. Each of these levels of government will contribute to the necessarily increased development of the future. The vital interest of all the people of the Nation in the development of western water resources will insure that this point pattern of water development continues. Wyomingites are also determined, however, that the proper relationship between the participants in this great endeavor be maintained. They believe that rights to the consumptive use of water conserved by Federal projects should be established pursuant to State law.

I would like to emphasize again, Mr. Chairman, that the citizens of Wyoming are grateful that this committee has included this survey of Wyoming water needs and preferences in the comprehensive record which it will use in advising Congress upon a national water policy. I seems to me that Wyoming has contributed much valuable and constructive information and that the committee's task when it is done will have been aided significantly in its accomplishments by this Wyoming hearing.

Sincerely yours,

GALE W. MCGEE, *U. S. Senator.*

STATEMENT OF PAUL D. SHAFTO, PRESIDENT, WYOMING AFL–CIO

My name is Paul D. Shafto. I am president of the Wyoming AFL–CIO. I am making this statement on behalf of the members of organized labor throughout the State who are concerned that our water resources receive full development. The reasons for our concern are not complicated, but we feel that it is important that they be understood.

Water means jobs. A look at the water use figures of the State would show that the industrial consumption of water is, in comparison to the amounts used for agricultural and domestic purposes, small. But this relative position of the major water users is deceiving if we simply add up the amounts of water consumed. The fact is that industry consumes only a small percentage of the water it uses in industrial processes. This means that industry is interested more in the amounts of water which are vailable to run through the necessary processes, than in the amounts of water which are available for consumption.

It is all very well to talk about attracting new industry to the State, but we cannot expect that industries which will make a really significant contribution to our economy will locate new plants and facilities where the prospects for adequate available water are unsatisfactory.

As I said before, water means jobs. Many of Wyoming's industries have been laying off men gradually for years. We need new industries to provide employment for the many citizens of our State who don't want to leave. It is difficult to uproot one's family, to cast aside the associations of a lifetime, and to move to some new State where employment opportunities are better. Wyoming workers don't want to do it, and it isn't in the interest of the State that they be forced to by economic circumstance. Every additional person who is gainfully employed in the Sate adds to the breadth and depth of the tax base from which must come the funds to support all the State's activities.

The AFL–CIO is grateful to the Senate Select Committee on National Water Resources for coming to the State for this hearing. We hope that the committee, and through them, the Congress will realize that we can't crowd a larger population and economic system into this area without more water, and recommend a program of water resource development which will provide enough of this basic resource.

STATEMENT OF FRANK J. TRELEASE, PROFESSOR OF LAW, UNIVERSITY OF WYOMING, LARAMIE, WYO.

Today the development of western water resources is thought of as a primarily Federal function, because most of the small, easily constructed projects have been built, and the huge multipurpose developments that are left require Federal financing. But purely Federal development is subject to two widespread criticisms—the lack of coordination between the multitude of agencies performing some functions related to river-basin development, and the lack of participation by local people and governments in the programs. It is no answer to these people that the development will take place primarily through the expenditure of Federal funds, their reply is that it is their lands, their lives, that will be directly affected.

In recent years there has been much talk about the so-called Barrett bill and its successors, that would have eliminated the threat to western water rights raised by the *Pelton Dam* case, and would have declared all private and Federal rights to western water to be derived from State law. Far more important than the loss of State control over water rights, is the lack of an effective State voice in relation to water projects.

On the Colorado River, the compact dividing the waters between the States of the upper basin also creates a commission composed of representatives of each of the States and of the Federal Government. This body is in control of the flow and use of the river, and while not specifically designated as a planning agency, it does some planning and makes recommendations to the Federal agencies developing the river and to Congress. On the Missouri, there is the Missouri Basin Inter-Agency Committee, an informal, voluntary collection of representatives of the Federal agencies most concerned with development, and the Governors of the 10 States drained by the stream. The MBIAC, however, is merely a "talk" committee, performing no planning functions and unable to make decisions where the interests of the agencies or States conflict, except by unanimous agreement. The only voice a State has in the planning of projects is the right to comment on the plans of the agency proposing the project to Congress—essen-

tially a right to protest, not to participate in planning. Yet in the Missouri Basin the people of these States will be expected to contribute or repay to the Federal Government $8 billion of the estimated $11 billion total cost of the Federal reclamation, power, and watershed projects planned and authorized for the area. Perhaps even more important, since almost complete development of the Missouri is presently planned, is the operation of the completed projects. Irrigation, flood control, navigation, and the production of power are not completely compatible and decisions on water storage and releases for one use will affect other uses, and will have important effects on the people of the valley. Yet there is no organization for such decisionmaking at present.

Overlapping, duplication, and competition among the Federal agencies responsible for water development has often been charged, and the fact that 10 years of nonaction have passed since the first Hoover Commission report does not mean that there is no longer need for coordination of Federal efforts. A solution often proposed is the valley authority modeled on TVA. This poses the threat of still more diminution of State power over water resources and of the right of the people of the valley to make decisions for themselves.

Six years ago a solution to both these problems was offered by the minority report of the Missouri Basin Survey Commission, subscribed by Senator Milton R. Young, of North Dakota; Congressman Clifford R. Hope, of Kansas; and Dean H. T. Person, of the University of Wyoming. They proposed a coordinating committee be set up by compact to which the basin States and the Federal Government would be parties. Simultaneously the Missouri River States Committee of the Council of State Governments prepared a draft of a similar compact for study. Such a planning and coordinating agency, representing each State and each Federal agency concerned, reporting to Congress on authorization of projects, placing each in its setting, presenting to the President a unified budget for the basin, operating the completed facilities, would solve the major problems on the Missouri and serve as a pattern for coordinated State-Federal efforts in other areas.

The legal basis for such a Federal-State compact, and an exposition of how it could be fitted into the existing system, have been described in detail in my article, "A Federal-State Compact for Missouri Basin Development" (vol. 7, Wyoming Law Journal, p. 161). I request the permission of the committee to insert the attached copy into the record.

A FEDERAL-STATE COMPACT FOR MISSOURI BASIN DEVELOPMENT

FRANK J. TRELEASE*

There seems to be general agreement today that something should be done about the hodgepodge of federal bureacracy presently engaged in the development of the Missouri River Valley. A large part of the criticism is directed at the federal agencies at the national level, but in a number of instances specific attention has been called to the situation in this basin, one-sixth of the nation's land area, where almost every type of land and water resource control problem is raised by the basin's wide variety of climate and topography. Two demands are voiced: for coordination of federal efforts, and for participation by local people and governments in the development program.

The federal agencies have been so often charged with waste and inefficiency, with having conflicting, duplicating and overlapping plans and efforts, with competing with each other and with colluding with each other, that citation is unnecessary. Proof of these charges, at least to the satisfaction of the accuser, is easily made through the selection and interpretation of facts from the great mass of data and history available. Yet even those who do not see these agencies as all bad are calling for a greater coordination than now exists in the planning and execution of programs and projects for the control and use of the basin's natural assets. At present the issue is not whether it shall be done, rather it is how the coordination might be best achieved. Many who make these demands raise the separate but related demand for a local voice in the future development of these resources. It is no answer to them that this development will take place primarily through the expenditure of federal funds; their reply is that it is their lands, their lives, that will be most directly affected.

Proposals for the solution of one or both of these problems have been numerous. A federal corporation similar to the Tennessee Valley Authority has been suggested, reorganization of the federal departments has been recommended, and various commissions to coordinate the existing agencies have been proposed. Local participation in the decision-making process has been proposed in conjunction with one or more of these in the forms of advisory committees of state representatives, public hearings, state nominated or appointed members of the commissions, and state representation on a joint federal-state agency created by compact between the United States and the states. Since the last of these, which we may call

* Professor of Law, University of Wyoming. During 1952 the author served as general counsel for the Missouri Basin Survey Commission, but almost needless to say, the opinions expressed in this article are those of the author and do not represent the views of the Commission.

the "compact approach", seems to have gathered a great deal of support and seems to be in accord with current political trends, it will be the subject of the greater part of this discussion.

An appraisal of these proposals can be intelligently made only with some understanding of the present assignments of resource development activities to the bureaus and agencies of the federal government and of the procedures that underly the execution of these functions. Existing measures for coordination must be understood and their deficiences determined before a substitute can be chosen. The part that the states today play in resource development should be examined, and the part that they should take should be determined. Brief outlines of these problems will be first offered,[1] then some of the legal implications of the compact approach will be examined.

The Existing Organization

Federal Functions. The principal water resource activities of the federal government consist of the reclamation of land, aid to navigation, flood control, the development of hydro-electric power, and soil conservation and watershed treatment. In the performance of these functions three agencies play the major part—the Department of the Interior, the Department of Agriculture, and the Corps of Engineers, United States Army—and the responsibility for each function is to some degree shared by at least by two of these agencies.[2] For instance, the reclamation of land by irrigation is primarily the responsibility of the Secretary of the Interior,[3] delegated to the Bureau of Reclamation, yet since dams constructed for flood control purposes have been located where use of the water might be made for irrigation, the Corps of Engineers may include that as one of the purposes of such dams.[4] Interior's Bureau of Indian Affairs has constructed many irrigation projects on Indian lands.[5] Also, the Secretary of Agriculture has been given some responsibility for irrigation development through the encouragement of the construction of water facilities[6] and through small projects built by Reclamation but managed by Agriculture.[7]

1. Some portions of this article resemble the report of the Missouri Basin Survey Commission to a marked degree, and where original authorship cannot be claimed, the author acknowledges his indebtedness for some of the factual material to members of the staff who worked with him, particularly Mr. Harry A. Steele of the Bureau of Agricultural Economics, Lincoln, Nebraska, Mr. Marvin Meade of the Bureau of Government Research of the University of Kansas, and Dr. W. Robert Parks of Iowa State College, without wishing to suggest in any way that the opinions expressed herein are to be attributed to them.
2. Summaries of the existing programs of the major agencies are set out in Missouri: Land and Water, The Report of the Missouri Basin Survey Commission (1953) pp. 69-81, substantive problems relating to these and related functions are found at pp. 113 to 185.
3. Section 2, Reclamation Act of 1902, 32 Stat. 388, 43 U.S.C.A. 411.
4. Section 8, Flood Control Act of 1944, 58 Stat. 887, 890, 33 U.S.C.A. 709.
5. See generally, Water Resources Law, (1950) Vol. 3 of the Report of the President's Water Resources Policy Commission, 246-254.
6. Water Facilities Act of 1937, 50 Stat. 869, as amended, 16 U.S.C.A. 590r-590x.
7. Water Conservation and Utilization Act of 1939, 53 Stat. 1418, as amended, 16 U.S.C.A. 590y-590z-11.

Navigation has from the beginning been the sole responsibility of the Corps of Engineers, yet some waters may be impounded in Reclamation dams to maintain a navigable channel.[8] Flood control, when first adopted as a national policy in 1936 was, with respect to the improvement of rivers and waterways, given to the agency with a hundred years' experience in those matters, the Corps of Engineers, but watershed measures for runoff and waterflow retardation and soil erosion prevention were assigned to the department dealing most directly with the land itself, the Department of Agriculture,[9] and three years later the Bureau of Reclamation was authorized to include flood control as one of the multiple purposes of its dams.[10]

As it was realized that hydroelectric power from waters impounded by government dams presented a feasible means of repaying a part of the costs of the projects, responsibility for its development was divided among several agencies. Construction responsibilities were given to the builders of the dams,[11] but the necessity for generating facilities at Army projects is determined by the Federal Power Commission,[12] which as part of its regular duties makes broad surveys of power needs of the country. While the marketing of the power was given to the Secretary of the Interior,[13] the Federal Power Commission has some authority over the rates.[14]

Even in soil conservation, responsibility has been divided among three agencies within the Department of Agriculture, the Soil Conservation Service, the Forest Service, and the Production and Marketing Administration,[15] although recently the latter agency's functions in this regard have been curtailed.[16] Furthermore the Bureau of Land Management within the Department of the Interior carries on similar programs on lands under its jurisdiction.[17]

This review of the statutory delegation of major purposes to the departments of government does not by any means give a complete picture

8. Section 9(b), Reclamation Project Act of 1939, 53 Stat. 1187, 43 U.S.C.A. 485h.
9. Section 2, Flood Control Act of 1936, 49 Stat. 1570, 33 U.S.C.A. 701a-1.
10. Reclamation Project Act of 1939, supra n. 8.
11. Sec. 5, 34 Stat. 116, 117 (1906), 43 U.S.C.A. 522 (reclamation projects); Sec. 10, Flood Control Act of 1944, 58 Stat. 887.
12. Sec. 10, Flood Control Act of 1944, supra n. 11.
13. Sec. 2, Fort Peck Project Act, 52 Stat. 403 (1938), 16 U.S.C.A. 833a; Sec. 5, Flood Control Act of 1944, 58 Stat. 887, 16 U.S.C.A. 825s.
14. Rates for power produced at Fort Peck Dam must be such as to amortize a capital investment based upno an allocation of costs by the F.P.C., and are subject o confirmation and approval by the F.P.C. (Secs. 5 and 6, Fort Peck Project Act, 52 Stat. 405, 16 U.S.C.A. 833d, 833e.) As to the other Corps of Engineers projects, Sec. 5 of the 1944 Flood Control Act provides that rate schedules are to become effective upon confirmation and approval by the F.P.C. (58 Sat. 887, 16 U.S.C.A. 825s) but Sec. 9(c) of that Act provides that as to projects authorized under the Pick-Sloan Plan, "the reclamation and power developments . . . shall be governed by the Federal Reclamation Laws," which do not require F.P.C. approval of rates. The Secretary of the Interior has taken the position that rates for power from the main stem dams on the Missouri need not have such approval, a position with which the F.P.C. disagrees. See Statement of Chairman Buchanan of the F.P.C., Hearings of the Sub-Committee to Study Civil Works, 82nd Cong., 2nd Sess., No. 82-16 (1952) 399.
15. See U. S. Government Organization Manual 1951-52, 239, 241, 247.
16. Secretary of Agriculture, Memorandum No. 1325, April 1, 1953.
17. See U. S. Government Organization Manual 1951-2, 194-195.

of all the functions which the United States performs in relation to the development of land and water resources. There remain a number of activities and programs which affect the major purpose projects or upon which those projects have an effect. These related activities deal with municipal and industrial water supply, control of pollution, fish and wildlife resources, public lands, national forests, national parks, mineral resources, rural electrification, research and investigation, education of the public, rehabilitation of Indians, and the collection of basic data upon which the planning of major projects must be founded. Forty-three federal agencies have been listed as having responsibilities connected with or bearing upon river basin development.[18]

Project Procedures. The procedures by which a project is carried into execution vary widely from agency to agency, having been evolved as separate processes for accomplishing their separate major purposes. Some are designed to give greater administrative efficiency than others; some to give greater legislative control by Congress; all provide essentially for project development rather than for a comprehensive unified program. Recent statutory provisions and administrative adjustments have resulted in cooperation and communication between agencies in relation to the coordination of projects, but there is no legal process for evaluating the individual projects against an overall program.

The procedures of the three major construction agencies could be expected to differ because of the fundamental dissimilarities of the agencies and of their programs. The basic premise behind the procedures for the execution of typical river and harbor or flood control project by the Corps of Engineers is that the Corps is a consulting body to Congress in the preliminary stages and an executive agency for carrying out Congressional directives in the construction stages. Reclamation projects are also handled by a single agency, the Bureau of Reclamation, whose procedures follow normal executive channels through the Secretary of the Interior to the President and from him to Congress. On the other hand, watershed programs are the joint responsibility of two bureaus within the Department of Agriculture, and unlike projects of the Corps or the Bureau, which are typically for major works such as dams, are essentially accelerated programs of a number of related land treatment measures scattered over wide areas and the lands of many persons. In spite of these differences, and of variations in the basic statutes governing the agencies and their projects, substantially identical steps are undertaken by each and parallel treatment has been achieved by administrative action.[19]

18. Water Resources Law, Vol. 3 of the Report of the President's Water Resources Policy Commission (1950) 430.

19. Detailed analyses of Corps of Engineers procedures may be found in several publications. Maas, *Muddy Waters* (1951) 21-36, emphasizes the actual processes; Water Resources Law, supra n. 18, 91-112, 134-148, collects the statutory requirements that have been laid down by Congress from time to time, and Hearings of the Sub-committee to Study Civil Works, 82nd Cong., 2nd Sess., No. 82-16 (1952) 74-77, contains a step by step presentation of a typical case. Reclamation procedures

The first step in a project is the preliminary examination or reconnaissance report. Preliminary examinations for Corps of Engineers projects are individually initiated by Congress, usually after local groups or officials interest their congressmen or senator in the stream improvement, and may also be initiated by resolutions of the Public Works Committee of the Senate or House calling for a review of a previous unfavorable report. On the other hand, the Secretary of Agriculture has been given general power to make preliminary examinations and surveys for runoff and waterflow retardation on the watersheds of all waterways that have been authorized for survey by the Army Engineers.[20] Still wider authority is granted the Secretary of the Interior; he has complete initiative in making investigations, examinations and surveys for the development of irrigation within the seventeen western states.[21]

The preliminary examinations proceed usually by means of field reconnaissance and examination of maps and other available data. Public hearings are held on Corps of Engineers projects and may be held by the Bureau of Reclamation or the Soil Conservation Service or Forest Service, who conduct examinations for the Department of Agriculture, but these latter agencies frequently use other methods of determining local opinion. If it appears that the project is practical and justified, it is administratively determined that a more detailed survey should be undertaken. Only in the case of Corps of Engineers projects is there a review of an unfavorable decision; interested parties may have a hearing before the Board of Engineers in Washington and since the report is final it is submitted to the states and other agencies before being transmitted to Congress.

The second step, a more complete survey or project investigation, is made as funds become available. Surveys of watershed and reclamation projects are reviewed during this stage by other agencies within the departments, who furnish consultation and advice to the responsible agency. After further review by states and other departments, as later noted, Congress is asked to take the next step, of authorizing the projects for construction.

Legislative authorization is required of all Corps of Engineers projects, but some reclamation projects are automatically authorized when the Secretary of the Interior finds that the project has engineering feasibility and that the repayable costs allocated to irrigation, power and municipal water, together with any allocations to flood control or navigation, equal the total estimated cost of construction.[22] If the project does not meet

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are discussed in Water Resources Law, supra, 186-198, Hearings, supra, 457-461. Department of Agriculture surveys are outlined in Hearings, supra, 194-195, and detailed in the Department's handbook, Preliminary Examinations and Surveys of Watersheds for Runoff and Waterflow Retardation and Soil Erosion Prevention, 1947.

20. Sec. 2, Flood Control Act of 1936, 49 Stat. 1570, 33 U.S.C.A. 701a-1.
21. Sec. 2, Reclamation Act of 1902, 32 Stat. 388, 43 U.S.C.A. 411.
22. Reclamation Project Act of 1939, 53 Stat. 1187, 43 U.S.C.A. 485.

the above requirements, or if an affected state or the Secretary of the Army objects to the project, then a specific authorization by Congress is necessary. The basic legislation for Department of Agriculture watershed programs empowers the Secretary to prosecute the work in accordance with plans approved by him, seemingly making it unnecessary to report to Congress if he approves a plan,[23] but as a matter of policy it has been decided to submit such programs for authorization in the same manner as projects of the Army Engineers.

The authorization of a project for construction is an important step, involving hearings before the appropriate congressional committees and a determination that the project should go ahead. Under present procedures the separate agencies present their separate programs to different committees, and no all-agency multiple purpose plan is presented to guide Congress in making its selection of the projects best designed and most urgently needed for optimum use and control of the resources.

Even though a project is authorized, either automatically or by Congress, work may not proceed without an appropriation of funds. Appropriations are generally made to the departments for the construction of specific projects, except that some large lump sums are appropriated to the Corps. In the case of watershed programs Department of Agriculture appropriations are distributed by the Secretary administratively among the various agencies responsible for making the direct payments, technical assistance, extension of credit or expenditure by which these programs are carried out. Appropriations to the Bureau of Reclamation, originally made from the Reclamation Fund,[24] are now also made from general funds and are reimbursable to the treasury.

Appropriations for construction frequently are split into funds for making the final plans and blueprints and for the actual physical construction of the works. It is a common occurrence for the final constructed work to be somewhat different from the project described in the authorizing legislation. Wide discretion has of necessity been granted to the agencies for determining the modifications that may be made in translating the survey into blueprints, for return trips to Congress for re-authorization would greatly delay the prosecution of the project. This presents a serious problem, especially in view of the lapse of time between authorization and construction that occurs in many instances. For example, the Glendo Dam on the North Platte was authorized in 1944 as a silt control structure, but in the years that have elapsed hydrological studies have indicated a greater supply of water in the river, and final plans for Glendo call for two multipurpose units at the site of the first small dam. In a number of instances dam sites have been moved up or down stream when final plans showed the desirability of a changed location. Congressional

23. Sec. 7, Flood Control Act of 1938, 52 Stat. 1215, 33 U.S.C.A. 701b-1.
24. See Water Resources Law, supra n. 18, 198-202.

control of such modifications is attained to some degree through the appropriation process, but a more adequate procedure would be for the modified plans to be matched against the ultimate program for development.

Since the construction of hydroelectric power dams by private industry may be an important part of basin development, the procedures by which private agencies obtain licenses from the Federal Power Commission deserve consideration. No non-federal agency may contruct a power dam on navigable waters without a license from the Commission issued upon a finding that the project is desirable and justified in the public interest,[25] and if the project is on a stream which is non-navigable but affects navigation the Commission may require that a license be obtained.[26] There are some procedures for integrating projects into basin-wide plans and for correlation with federal projects; no license affecting the navigable capacity of any waters may be issued until the plans have been approved by the Chief of Engineers,[27] and hearings are held under procedures providing for notice to interested government authorities and for intervention in the proceedings and the filing of protests against the application. Licenses are issued for a period of not exceeding fifty years,[28] after which the United States may, on two years' notice, take over and maintain the project, paying the net investment of the licensee and reasonable damages.[29]

Conflicts have arisen between private and government agencies over which should construct dams at certain sites. The law gives a preference in the issuance of licenses to states and muncipalities (which include any subdivision of a state capable of carrying on a power business), and whenever the Commission feels that the development of the water resources should be undertaken by the United States itself the law states that it shall not approve the application but shall submit a complete report to Congress with its recommendations concerning such development.[30] Recently several private power companies have applied for licenses for dams on the sites of proposed federal projects, and one of these cases has reached the Supreme Court of the United States.[31] The Court has held that the "approval" of a comprehensive plan for basin development by Congress does not prevent the Commission from issuing a license to a private concern to build one of the dams called for by the plan, that only an express withdrawal of the project from the jurisdiction of the Commission or the implied withdrawal by the authorization of construction would have that effect. This present state of the law leaves much to be desired. A private hydroelectric dam may affect the comprehensive plans for river development in many ways. It may be a most desirable and important link in a series of projects,

25. Secs. 4(e), 23(b), Federal Power Act, 16 U.S.C.A. 797(e), 817.
26. Sec. 23(b), Federal Power Act, 16 U.S.C.A. 817.
27. Sec. 4(e), Federal Power Act, 16 U.S.C.A. 797(e).
28. Sec. 6, Federal Power Act, 16 U.S.C.A. 799.
29. Sec. 14, Federal Power Act, 16 U.S.C.A. 807.
30. Sec. 7(b) Federal Power Act, 16 U.S.C.A. 800(b).
31. U. S. ex rel. Chapman v. Federal Power Commission (1953) 73 S. Ct. 609.

private and federal; on the other hand it may utilize or drown out dam sites suitable for a much larger project, or it may skim the cream off a proposed unified system of federal projects, eliminating the revenues of the particular dam from the pooled income of the public system, which may reduce the benefit-cost ratio so that the system becomes unfeasible and the remainder of the power is lost and irrigation features of the plan must be abandonded. Unified basin planning demands that the decision in such cases should not rest upon the accident of whether or not government planning has arrived at the authorization stage, and that prior to that stage, one agency with one concept of a comprehensive plan should not be permitted to block the plan of another by unilateral action.

Procedures for Review by Other Agencies. Statutory requirements for inter-agency consultation and review stem primarily from Section 1 of the Flood Control Act of 1944,[32] which requires that prior to transmission to Congress reports of the Corps of Engineers must be submitted to the Secretary of the Interior if they relate to waters arising west of the 97th meridian, and that Bureau of Reclamation reports must be submitted to the Secretary of the Army. During the course of investigations these agencies are to give each other information developed, an opportunity for consultation, and to the extent deemed practical, an opportunity to cooperate in the investigations. When irrigation is to be developed at Army dams and reservoirs the Secretary of the Interior makes an investigation as to the feasibility of incorporating irrigation features, and if the Secretary of the Army adopts his recommendations and the features are authorized by Congress, Interior has responsibility for the construction and operation of the added irrigation works. At reclamation projects the Secretary of the Interior, under the Reclamation Project Act of 1939, is required only to consult with the Secretary of the Army on the allocation of a part of the cost of the works to flood control and navigation,[33] but it has been the administrative practice for the Corps to make the studies and evaluations of flood damages and flood control benefits which are used by the Bureau of Reclamation in its reports. Each report of these agencies must under the 1944 Act be submitted to "affected" states, which include those in which the project is located and those west of the 98th meridian in the same basin.

While the 1944 Act by its terms does not apply to the Secretary of Agriculture he follows a similar procedure and refers survey reports to the governors of the states concerned and to interested Federal agencies for comment.

During investigation of any project which impounds or diverts water, consultations must be had with the Fish and Wildlife Service and with the head of the state agency concerned with wildlife resources, and the report

32. 58 Stat. 887, 33 U.S.C.A. 701-1.
33. Sec. 9(b), 53 Stat. 1187, 43 U.S.C.A. 485h.

must contain their recommendations on possible damage to wildlife and on means for avoiding such damage.[34]

In 1943 the President required all public works agencies to submit to the Bureau of the Budget, with their budget estimates, advance programs and estimates of requirements for planning funds, and to clear all project reports through the Executive Office of the President in order to determine their relationship to this program of the President.[35] For various reasons this agency has not, however, functioned as an over-all planning agency.[36]

Although these procedures for inter-agency consultation, review, and cooperative investigation have enabled the parts of the present legal and administrative machinery to move forward in some order, they have not been entirely adequate for the task of coordinating agency activities. In the first place, the arrangements for inter-agency consultation fail to cover all the areas where inter-agency cooperation is required. But the main weakness in the present procedure for coordination is that the procedure is largely the negative one of reviewing and criticizing programs and plans that have already been developed. The agencies are brought together at too late a stage to achieve coordinated program development.

State and Local Participation. Basin development, or even the so-called federal program for the development of a basin, is of course not a wholly federal function, with all the planning, construction work and money being furnished by the United States. States, local districts, individuals, and groups of consumers and users will play a very large part in some aspects of the program and a lesser part in others.

In the field of construction of projects, the only state in the basin that has made any real strides is Montana, whose Water Conservation Board, created in 1934,[37] has constructed many smaller projects that now provide irrigation for 252,920 acres in that state and supplemental water for an additional 133,294 acres. It has also furnished engineering services for the construction of over 10,000 miles of rural electrification lines that serve over 12,000 customers, and has supervised the building of works for many irrigation districts and private companies. Much of this work was financed in part by such federal agencies as the WPA and PWA but a third of the funds, well over $5,000,000, has been appropriated out of state moneys. North Dakota,[38] Iowa,[39] and Wyoming[40] have more recently established agencies with authority to construct or participate in the construction and maintenance of water development projects, but none has matched the

34. 60 Stat. 1080, 16 U.S.C.A. 661-663.
35. Ex. Order 9384, Oct. 4, 1943.
36. See Missouri: Land and Water (1953), 242.
37. Rev. Code Mont. 1935, Secs. 349.1 to 349.38.
38. Water Conservation Commission, N. Dak. Rev. Code (1947 Supp.) Secs. 61-0214 et seq.
39. Natural Resources Council, Iowa Code 1950, Secs. 455A.1 et seq.
40. Wyoming Natural Resource Board, Wyo. Comp. Stat. (1945) (1951 Cum. Supp.) Secs. 18-2101 to 18-2114.

record of the Montana board and their experience has been too short lived to predict their ultimate share in such work.

Local districts have played a greater part in construction and operations than the states themselves. In the upper basin irrigation and conservancy districts, largely formed to meet the requirements of a suitable entity which may contract with the United States for the operation, maintenace, and reimbursement of reclamation projects,[41] have constructed the distribution works by which the water is transported from the dams to the benefited lands. In the lower basin drainage and levee districts have served similar functions in providing land, operation, and maintenance for federal water control works.[42] In Nebraska, that state's unique public power and irrigation districts have built projects that serve large areas of land with irrigation water and have through the construction and purchase of generating facilities become the sole source of electric power in the state. These districts are not authorized to levy taxes as are irrigation and conservancy districts, and while some of their larger structures were built with federal aid during the depression the projects are financed principally by the issuance of revenue bonds.[43]

While the states and local districts play a relatively minor part in the direct construction of works, they and their people will be called upon to make very substantial contributions to the federal program. They will be directly responsible for many adjuncts of the federal reservoir projects, such as parks and recreation facilities, stocking of fish, and management of game habitats. The Missouri Basin Region Agricultural Research Committee, established by the state experiment stations, has launched detailed research projects on problems considered of first importance in the development program, which will be carried out through the cooperative efforts of the land grant colleges and the Department of Agriculture. When the states' programs for construction, resource use education, research and regulation are all considered it is estimated that state expenditures in the natural resource field will amount to more than $400,000,000 within the next six years.[44]

But a still larger contribution that will be made by the people of the region is the reimbursement to the federal treasury by the water and power users of the basin of the costs assigned to the irrigation, municipal water, and hydroelectric power features of the federal program. In general local contributions will not be required with respect to navigation works and the contributions to Corps of Engineer's flood control works will be limited to maintenance of and the furnishing of land for local protection works. In the case of the large multiple purpose dams those elements of the cost that are allocated to flood control or navigation are non-reimbursable,[45]

41. Sec. 4, 53 Stat. 1187, 43 U.S.C.A. 485.
42. (1936) 49 Stat. 1571, 33 U.S.C.A. 701c.
43. (1938) 52 Stat. 1215, 33 U.S.C. A. 701e-1, (1939) 53 Stat. 1187, 443 U.S.C. 485h.
44. Missouri: Land and Water (1953) 84.
45. (1938) 52 Stat. 1215, 33 U.S.C. 701e-1, (1939) 53 Stat. 1187, 43 U.S.C.A. 485h.

but allocations to irrigation, power and muncipal water supply are repayable, and water and power users are expected to repay costs allocated to those purposes.[46] In practice, however, the burden of repayment is not directly related to the costs allocated, since costs allocable to irrigation but beyond the water users' ability to repay are assigned for return from revenue from power or municipal water supply.[47] It has been argued by some that this method of collecting of reimbursement results in a heavy subsidy of irrigation farmers by the power users. However, if the irrigation features of the projects were eliminated and larger allocations made to power, the rates for power would increase to the point where its production would become infeasible, hence the combination may be necessary to make either purpose feasible. The assignment of power revenues to repay the allocated costs of irrigation features is therefore simply a bookkeeping entry insuring the return to the United States from all purposes of the total reimbursable costs of the project. Total returns from water and power uses in the Missouri Basin are expected to amount to $3,347,483,000.[48]

Local contributions to watershed treatment programs take a more direct form. The Soil Conservation Service furnishes technical assistance, through local soil conservation districts, to aid participating farmers in analyzing their soil and crop needs and installing the measures and practices best calculated to conserve the soil and retard runoff. Expenses incurred are paid by the farmer, whose contribution may be in part labor and services, although his costs may be recouped in part through the receipt of incentive payments under the National Conservation Program. Of the $8,487,623,000 which the Department of Agriculture's proposed "Missouri River Basin Agricultural Program"[49] is estimated to cost, the Department has assigned $4,995,623,000 as the portion which will be borne by landowners; state and local governments are expected to contribute $128,267,000, leaving a net amount of $3,063,137,000 to be borne by the federal government over a thirty year period.

State participation in the planning for resource development takes a number of forms. Most of the states have one or more agencies involved to some extent in either local planning or participating in the planning of

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46. (1939) 43 U.S.C.A. 485h.
47. Missouri Basin Account:
Reimbursable Cost Allocations and Repayments:

	Allocations	*Scheduled Repayments*
Irrigation	$2,577,113,000	$ 905,367,400
Power	687,038,000	2,333,550,400
Municipal Water	19,695,000	49,235,200
Fish and Wildlife	660,000	----
Recreation	3,647,000	----
Reserve (Power System)	59,330,000	59,330,000
	$3,347,483,000	$3,347,483,000

Source: Page 43, Report of the Regional Director, Region 7, Lower Platte River Basin, Bureau of Reclamation, Denver, Colorado. Payout schedule as of Sept. 1951.

48. Ibid.
49. House Doc. 373, 81st Cong., 2nd Sess. (1949).

federal programs. These may take the form of over-all commissions such as Colorado's State Planning Commission, or construction agencies which also possess a planning function such as the Montana Water Conservation Board, or the principle water agency of the state, or Colorado's Water Conservation Board, or a special advisory committee to the governor such as exists in Kansas. In addition, departments of health, game and fish departments, highway commissions, park boards, state universities, and land grant colleges and departments of agriculture also play a part. In some states coordination between these state agencies is achieved by an informal arrangement such as Missouri's State Inter-Agency Committee, or by a statutory board chosen to represent various agencies such as Wyoming's Natural Resource Board.

The states also have a share in basin-wide planning. They have been accorded membership in the Missouri Basin Inter-Agency Committee[50] and they have formed the Missouri River States Committee which comprises all of the governors of the Basin states and meets at intervals to provide a forum for discussion of state problems and actions relative to basin development. The Missouri River States Committee was instrumental in bringing about the compromise that resulted in congressional authorization of the Pick-Sloan Plan, but its most notable contribution to date has been the sponsorship of the concept of a Missouri River Basin Compact.[51]

Turning from over-all state or basin planning to the question of state participation in individual project planning, the Flood Control Act of 1944[52] provides that investigations which form the basis of any plans, proposals or reports shall be conducted so as to give to the affected states information developed by the investigation and also opportunity for consultation regarding plans.

In practice, this usually involves conducting public hearings prior to initiation of preliminary surveys, at which time all persons having an interest in the project may appear and testify concerning the proposed project. A further opportunity for the expression of local views may be provided in the case of unfavorable agency reports on preliminary examinations or detailed surveys.

In addition, to the extent deemed practicable by the Chief of Engineers or Secretary of Interior, the states may be given an opportunity to cooperate in the investigation. Thus, by the language of the statute, the extent to which the states actually participate in investigations leading to formulation of project plans is left to the discretion of the head of the department responsible for conducting the investigation.

Upon completion of all investigations, and prior to submission of survey reports to Congress, the Chief of Engineers and the Secretary of

50. See infra at notes 62-64.
51. See infra at note 76a.
52. Sec. 1, 58 Stat. 887, 33 U.S.C.A. 701-1.

Interior are directed to transmit a copy of their proposed reports to each affected state. The Department of Agriculture by administrative decision follows the same practice. Within ninety days after receipt of the proposed report, the written views and recommendations of each state may be submitted to the Chief of Engineers or Secretary of Interior, and these comments are attached to the project report which is submitted to Congress. In actual practice, the effect of this requirement is open to some question, for the federal agencies are not compelled to modify their plans in accordance with the states' expressed views and recommendation. They are required to take no action other than to append the states' comments to the project report submitted to Congress. In fact, however, it appears that some of the states have been comparatively successful in achieving a workable relationship with the federal agencies in individual project planning, and have been able to modify project plans to more nearly fit local needs and desires.

Apart from over all planning for the basin or for major projects in the basin program, the states are involved in the planning of the number of subsidiary or secondary features of the federal program such as recreation, fish and wildlife, and pollution control. Fish and wildlife regulation is primarily a state function, but the federal government provides some technical assistance and federal aid in certain cases. State conservation departments must be consulted concerning the effects of projects on fish and wildlife resources with a view to preventing loss on or damage to those resources.[53] The wildlife habitat development programs on federal water development projects are jointly planned by Interior's Fish and Wildlife Service and state departments, and generally result in the turning over of the completed developments to the state agencies. Similarly, since the basin development program presently being pursued will provide greatly increased possibilities for the establishment of state parks and recreation areas there has been close cooperation between federal and state agencies in this field. As for pollution control, the Water Pollution Control Act of 1948[54] recognized that the control of water pollution was the primary responsibility of the states, but the United States Public Health Service furnishes technical research and service, and cooperates with state health departments in gathering data on pollution problems and formulating of plans for their control.

Finally, mention should be made of one very important function of the states in the water resource program, that is, the control of water resources by state law and administrative officials. In the lower basin, the state law of riparian rights may have a major effect upon the handling of drainage and watershed management programs. In the upper basin, in all of the states where irrigation is practiced, the doctrine of prior appropriation is

53. (1946) 60 Stat. 1080, 43 U.S.C.A. 485h.
54. (1948) 62 Stat. 1115, 33 U.S.C.A. 466.

the paramount water law and state law and administration will have a major effect upon the program.[55]

In eight of the states of the basin, (all but Iowa and Missouri), adjudication of the rights to use water are made by the state, either through courts or administrative officials. In Kansas, Minnesota, Nebraska, North Dakota, South Dakota, and Wyoming a permit must be obtained in advance before an appropriation of water to beneficial use can be made. Since the major dams of the Corps of Engineers are designed to serve primarily navigation and flood control functions, which are regarded as an exercise of the superior right of the United States to control navigability of streams, no state appropriations are taken out for these purposes,[56] but the Bureau of Reclamation must comply with state law in the prosecution of its projects.[57] Since the water officials of these states uniformly have the power to deny an application for an appropriation on the grounds that it conflicts with the public interest, they may have what amounts to a veto power over projects within their borders. An example of this is the action of the State Engineer of Wyoming, who withheld the permit for the construction of the Glendo Unit in the North Platte River until he was satisfied that the best interests of Wyoming would be served thereby.

Another important phase of water administration by the state is the distribution of water to the persons entitled thereto by priority. In Colorado, Nebraska, and Wyoming the water is distributed by water commissioners and water masters under a central administration,[58] North Dakota has given its Water Conservation Commission control over its streams,[59] in Kansas the State Engineer has the power to distribute water to adjudicated rights,[60] and in South Dakota the State Engineer may appoint a water commissioner when necessary in his judgment or in the judgment of the court that adjudicated the rights.[61] Montana has no centralized agency but adjudicated water rights may be controlled by a water commissioner appointed by the court that decreed the priorities.[62]

Missouri Basin Inter-Agency Committee. Shortly after the Flood Control Act of 1944, which set in motion the vast program known as the Pick-Sloan Program, the MBIAC was created as a step toward coordinating the resource development of the Basin. The committee consists of representatives of the Departments of Agriculture, Commerce, and the Interior, the Corps of Engineers, the Federal Power Commission, and the Public Health

55. A summary of state water law in the basin is found in Missouri: Land and Water (1953) 193-202.
56. Gilman v Philadelphia, (1865) 3 Wall. (U.S.) 713; Oklahoma v. Atkinson, (1941) 313 U.S. 508, 61 S.Ct. 1050, 85 L. Ed. 1487.
57. Sec. 8, Reclamation Act of 1902, 32 Stat. 331, 43 U.S.C.A. 383.
58. 1935 Colo. Stat. Ann. c. 190, Secs. 201 et seq.; Nebr. Rev. Stat. 1943, Secs. 46-215 et seq.; Wyo. Comp. Stat. 1945, Secs. 71-101 et seq.
59. N. Dak. Rev. Code 1943, c. 61-02.
60. Kans. Gen. Stats. 1949, c. 82-a.
61. S. Dak. Code 1939, Sec. 61.0121.
62. Mont. Rev. Code 1947, Secs. 89-1001 et seq.

Service of the Federal Security Agency. Originally five governors of the basin states sat as members, but since March 1952, all ten governors have become members.

The MBIAC was not created by statute, but is a voluntary interdepartmental organization which provides a medium for the interchange of information and the discussion of common problems. It is not a planning agency, for although it annually compiles a "six-year program" of proposed land and water developments for the basin, which summarizes work programs, proposes a construction schedule, and estimates costs, this program is simply a compilation of the already crystallized estimates and plans of the individual agencies.

As a coordinating committee, the MBIAC is powerless except where disagreements may be ironed out by the interchanging of information and the reaching of unanimous agreements. There have been a number of controversies relating to jurisdictional disputes or to fundamental disagreements on the form that a particular project should take that have arisen between the agencies or between an agency and a state. The report of the Missouri Basin Survey Commission details a number of these, pointing out the legal inability of such a voluntary organization to handle such basic problems.[63] In fairness it must be pointed out that the report also lists a number of tangible accomplishments of MBIAC.[64]

Existing Plans. It should not be assumed, in speaking of the need for a planning agency for the Missouri Basin, that there are no plans at present for that area. On the contrary, the three major agencies have in the works a total program which, including projects under construction, authorized, and still in the preliminary planning stage, will amount to sixteen billion dollars worth of construction.[65] This figure is staggering, but should not be frightening. It is calculated without reference to whether the money comes from federal or local sources, it does not reflect ultimate reimbursement from water and power users, and it is estimated that for every dollar spent, benefits of about $1.75 will be realized.[66] It might then be thought, that so much in the way of plans now in existance must represent total planning for the basin and that little remains to be done. But in fact, completed projects and those under construction account for only slightly more than two billion dollars of this total, and a like amount represents projects authorized by Congress and scheduled by the agencies, but still subject to final planning and the appropriation of funds before work can begin. The remainder, or twelve billions, is the estimated cost of projects and programs proposed as feasible or regarded as potential, all of which are subject to future study and final planning.

63. Missouri: Land and Water (1953) 215-222.
64. Ibid., 85-86, 248.
65. Ibid., 94.
66. Ibid., 94.

The programs of the Corps of Engineers and the Bureau of Reclamation are jointly known as the Pick-Sloan Plan and stem from the blanket authorization in the 1944 Flood Control Act of the combined Army and Bureau plans for the full development and control of the basin's water resources.[67] The Army's share of this plan include navigation channel improvements and flood control levees from Sioux City to St. Louis, the great dams that would transfer the "Big Muddy" into a series of clear lakes stretching across the Dakotas, and many reservoirs on tributaries and local protection works to guard the cities of the lower basin against the repetition of disastrous floods. The Bureau's plan invisages almost 100 dams that will, together with the irrigation and power features of the dams constructed by the Corps, eventually irrigate five million acres of new land, provide supplemental water for another one million and generate an annual average of over nine billion kilowatt hours of electric energy. As studies and plans have progressed since 1944, the Pick-Sloan Plan has assumed a flexible nature as improvements and modifications have suggested themselves, and many final decisions remain to be made before most of the units of the program have been constructed. 1973 is the earliest date on which it is estimated the plan could be completed if the work proceeded as fast as possible; the actual completion is undoubtedly many more years in the future.

The Department of Agriculture's program for the basin,[68] sometimes known as the "Young Plan," has as yet no Congressional approval. It calls for the extensive application of a number of measures—stabilization of small water courses, aids to irrigation, drainage, rural electrification and many conservation and improvement measures for grassland and cropland. These activities are presently being carried out in the basin under existing authorities and nation-wide federal programs, and the plan itself is to unify and accelerate these programs in this area in such a way as to complete them during a thirty-year period. The total expense involved was estimated at almost eight and one-half billion dollars, and the Department was requested to split the program up on a watershed basis. In 1952 the first supplement to the report was filed with Congress,[69] and proposed the treatment of five smaller areas regarded as critical, within ten and twenty year periods, at a total cost of 386 million dollars, one third of which would come from non-federal sources.

Operation. It must be recognized that the construction of projects is but the first phase of water and land development. The Missouri Basin is now primarily in that stage, but ultimately the manner in which the water supplies are controlled and used will be the truly significant factor in the actual development of the Basin.

67. Sec. 9, 58 Stat. 887, 891.
68. House Doc. 373, 81st Cong. 1st Sess. (1949).
69. House Doc. 530, 82nd Cong. 2nd Sess. (1952).

One of the major fields of operations control will, of course, be river and reservoir regulation. It is obvious that all of the storage reservoirs will form integral parts of a machine that must be operated as a whole. Each will have its separate job to do, but each unit must be carefully tuned to the working of the whole machine. Many of the small reservoirs for consumptive uses may have but little effect upon the overall picture, but the large federal dams of the main stem and major tributaries must be under a single operation. The problem is who is to act as watermaster, who shall determine when water shall be impounded, when it should be released. Inevitably conflicts will raise. One of these has already been foreseen; the continued development of irrigation may result in enough consumption of water to interfere with a flowing navigation channel during drouths. Congress has already settled this problem in the O'Mahoney-Milliken amendment to the 1944 Flood Control Act which gives the priority to beneficial consumptive uses,[70] but in the future many other such conflicts may arise. Navigation may some day conflict with hydroelectric power, since navigation requires that water be stored in the winter and released in the summer, while power demands are higher during the winter months. The development of irrigation may eventually consume enough water to curtail the production of hydroelectric power. A single organization is needed to recommend to Congress those uses entitled to preference and to coordinate water releases in accordance with whatever priorities are set up. The unilaterial decision by a single agency should not control.

Other phases of operations will require supervision in the future. Contracts for irrigation reimbursement, contracts for the sale of power, and the administration of the system as a whole will have a great effect on the actual accomplishment of the objectives of the projects. The integration of power systems may be required.

No agency presently existing within the federal government is equipped to determine the policies, make the decisions, and give the supervision which will be required as development progresses.

Proposals for Change

Federal Reorganization. Suggestions for the improvement of the federal organization have generally been of three types: (1) reorganization of the executive departments and a reassigning of functions; (2) a corporate authority modeled on T.V.A. that would to a large extent take over the functions of the departments; or (3) the establishment of a new commission that would coordinate the work of the present agencies. Several proposals have been made for each type, but the salient feature of such suggestions can be seen from a short examination of typical solutions offered.

In 1949 the Hoover Commission recommended that the Department of the Interior be reorganized along more functional and major purpose

70. Sec. 1 (b), 58 Stat. 887, 33 U.S.C.A. 701-1.

lines.[71] The features of the plan that are of primary interest here are the establishment of a Water Development and Use Service within the department that would include all present functions of the Bureau of Reclamation in relation to irrigation and power supply, and all functions of river and harbor improvement and flood control that are presently under the jurisdiction of the Corps of Engineers. There would be set up in the office of the President a Board of Impartial Analysis which would review and report to the President the public and economic value of projects proposed by the Department, and no irrigation or reclamation project would be undertaken without a report to the Board from the Department of Agriculture.

The most recent bill for a Missouri Valley Authority,[72] called for the establishment of a federal corporation controlled by a board of five directors, three with a five-year residence in the valley, appointed by the President with the advice and consent of the Senate. Local representation, other than by board membership, and coordination, other than by displacement, was provided for by an advisory committee consisting of representatives of each state in the valley, each federal agency interested in resource development and representatives of agriculture, industry, labor and recreational interests. Coordination or displacement would be at the option of the corporation. Having complete planning power, it might include presently authorized projects "insofar as practiable" and give "particular consideration" to the Pick-Sloan Plan. It was directed to incorporate into its plan the programs of existing agencies and insure such participation by them as it might deem consistent with maximum development.

A coordinating commission could of course take many forms. One of these, that might be called a "legalized Inter-Agency Committee," has been proposed by a unit of the Bureau of the Budget, after a request by President Truman to prepare legislation to carry into effect the recommendations of the President's Water Resources Policy Commission. Working in consultation with the interested agencies, the Bureau produced the draft "Water Resources Policy Act of 1953" which was never introduced into Congress but that was made available to Congress by President Truman as he left office.[73] The river basin commissions proposed would have a federal chairman, members of the Departments of the Army, Interior, Agriculture, and Commerce, the F.P.C., and the Federal Security Agency, and the governor of each state in the region would appoint a member. Each commission would prepare a regional program, review agency projects to determine their consistency with that program, recommend which agency should undertake a project in case of conflict, and make recommendations for the allocation of costs among the various purposes to be served by a

71. Report of the Commission on Orgnaization of the Executive Branch of the Government, "Department of the Interior" (1949).
72. S. 1883, 82nd Cong. 1st Sess. (1951).
73. 99 Cong. Rec. 454, Jan. 19, 1953.

project. There might be twelve of such commissions, established as the president deemed necessary, and their work would be reviewed nationally, and national policy would be formed, by the President, who might use existing facilities in his office or appoint an advisory board consisting of private citizens of broad experience to advise him on water and related land use problems.

Although the Bureau of the Budget was attacking the problem on a national scale, President Truman also appointed the 11-man, bipartisan Missouri Basin Survey Commission to make a special study of that region, and the report of that body was submitted to President Eisenhower on February 20, 1953. The Survey Commission recommended still another type of coordinating body, that would more closely resemble the board of directors of a river valley authority than it would an inter-agency committee, since it would be composed of five presidentially appointed residents of the Basin not having any connection with the existing agencies. The Survey Commission was explicit in its description of the powers and functions that such a coordinating commission should have in order to effectively operate,[74] and in stating its reasons for the recommendations. A summary of those powers is set out here. A coordinating agency could of course be strong or weak, depending upon the powers and functions that were assigned to it. The Survey Commission recommended a strong body that would be able to remedy most if not all of the defects that exist in present procedures, by making consistent decisions at all stages of program execution.

The absolute essential is the authority to prepare a master plan—a comprehensive program for the ultimate and optimum development of the basin's resources that would take into consideration all of the many purposes to be served. The present agencies are proceeding today for the most part on a project to project basis, and whatever plans exist that may be called ultimate or complete are the plans of single agency that will serve that agency's purpose and function, and planning for the same areas and streams is done by different agencies with different functions and with varying standards for evaluating projects. Up to now, such piecemeal planning has perhaps been permissible because ultimate development is so far in the future that it may be assumed that the particular project will fit into any eventual master plan, but as development proceeds, competition between different projects is bound to increase. The Survey Commission therefore recommended that the coordinating agency incorporate the plans and programs of the existing agencies to the extent that they are com-

74. Missouri: Land and Water (1950) 265, 266. Curiously, the Survey Commission seriously weakened its coordinating agency by recommending that it should not "function" in a state that declined to consent to its establishment. It is not explained how a commission might coordinate the activities of the Bureau of Reclamation, Corps of Engineers, etc., in one state and not another, when the agencies are operating throughout the basin and the functions of the commission are stated in terms of a comprehensive, basin wide, balanced, program. See pp. 62-64, see dissent, pp. 13-14.

patible with the full development of the basin's resources, that future investigations and surveys be directed and supervised by the coordinating body, which might, in the solution of jurisdictional conflicts, direct joint surveys. Requests for authorization would be analyzed and reviewed with respect to the engineering and economic feasibility of the project and its relation to the basin program, and transmitted to Congress with a report on these matters, so that Congress could see the project in perspective rather than as an isolated case. The Federal Power Commission would not have the power to issue licenses or permits for private developments without a certification that the project was consistent with the basin program. The basin program would of course, be a flexible framework, not a blueprint, and would be kept current and modified from time to time on the basis of experience, new knowledge, and changing needs.

The coordinating agency would also have important budget functions. Instead of the present agency budget requests to Congress, competing with each other for available funds, a consolidated basin resource budget would be prepared by the central organization in consultation with the operating agencies, showing three levels of expenditure and the features to be added or dropped as the level changed. An informed recommendation might thus be made as to the proper priority schedule needed to carry out the plan.

The Survey Commission also recommended that the coordinating agency control the operation of the completed projects so as to insure that the ultimate employment of the resources, as well as the construction of works, would carry out the basin plan. Central control of river operations, directing the operation of other resource facilities, and preparing coordinated plans for emergency operation of flood control structures would be the duties of the coordinating body. Power distribution and control of rates, would also be a function of the new agency.

Proposals for Federal-State Compacts. The exact history of an idea is difficult to trace, and the originator of the first proposal for the solution of river basin problems by compact between the various states of the basin and the United States as an active party is unknown to this author. In 1947 a Comment in the Yale Law Journal[75] proposed the complete fusion of state and federal powers over resource development by the creation of a corporation modeled on TVA, which would possess all federal powers and to which would be delegated, by a federal-state compact, all important state powers over water and related resources. Mr. C. Petrus Peterson, of Lincoln, Nebraska, 1951 president of the National Reclamation Association, proposed in a speech given November 30, 1949 to the Missouri River States Committee that "area home rule" be given to a basin organization set up by a compact to which both levels of government would be parties. Ray-

75. Governmental Techniques for the Conservation and Utilization of Water Resources (1947) 56 Yale L. J. 276.

mond Moley, in a 1950 monograph entitled "Valley Authorities"[76] concluded that a corporation created by interstate compact which the federal government would join would have significant advantages over the TVA type of authority. *The Interstate Compact since 1925,* authored in 1951 by Zimmermann and Wendell under the sponsorship of the Council of State Governments, suggests the usefulness of the device as a basic legal medium of cooperation between the different levels of government, and devotes considerable space to arguing the legality of such a plan.

A quite concrete proposal for such a compact has been drawn up. The Missouri River States Committee commissioned the late Clifford H. Stone of the Colorado Water Conservation Board, James M. Landis of New York, and Governor Phil M. Donnelly of Missouri to prepare a tentative draft of a compact to serve as the basis of discussions. In December, 1952, the draft, with some revisions, was approved by the Committee and published[76a] in order that further study and consideration might be given to the use of the compact approach in the basin's development.

The draft declares that the purpose of the compact is to facilitate the agricultural and industrial development of the Missouri Basin through a unified intergovernmental program for the management, conservation, storage, utilization and development of the land and water resources of the basin. The compact would establish a Missouri River Basin Commission of the United States Government and the participating states to integrate the programs and operations of state and federal agencies and to eliminate the causes of present and future controversies by securing effective Federal-state and interstate coordination.

The Missouri River Basin Commission would be an administrative and planning agency of the participating governments and of each of them. It would be composed of one member from each party state designated or appointed in accordance with the law of his state, and of not less than three nor more than five commissioners of the United States appointed by the President. Each party state would have one vote, and the United States would have a vote equal to the number of state votes present at any meeting, the vote of the United States being cast as a unit unless Congress prescribes otherwise. A quorum would consist of representatives of the United States and of five of the principal states and a majority of all participating governments, and a three-fourths vote would be required for effective action.

The commission would have the power to make comprehensive plans and adopt policies and procedures to effectuate integrated operation in the release, storage, or diversion of the waters of the Missouri Basin. If it found that the operational plan of a governmental agency or private development having a substantial effect on interstate relations in the use of the waters

76. No. 438 "National Economic Problems" (1950).
76a. Council of State Governments (1953).

of the Missouri River would conflict with its plan of integrated operation it might make such recommendations as necessary to the appropriate government or governments for action. The commission would promote and aid the coordination of the activities of Federal and state water or other related natural resource planning or conservation agencies, and cooperate with such agencies in the development and management of the resources. It would make integrated plans for the conservation, development and utilization of the water and related resources, and submit the same to the member governments. It would review all plans for any project for flood control, irrigation or other water use which might have a substantial effect on interstate relations in the use of the water and submit its findings to the member governments. All governments and their agencies would submit plans for all such projects to the commission in sufficient time for appraisal and findings prior to authorization or approval. Projects at any state of construction might be reviewed if a specific request were made by any member government. The commission might conduct such public hearings and adopt such rules and regulations as in its judgment might be appropriate. It would make an annual report to the President and Congress and to the Governors and legislatures of the participating states on the activities of the commission, embodying its plans, recommendations and findings.

The facilities of the commission would be available to any two or more participating governments who might enter into supplementary agreements for the regulation and abatement of pollution, for the development and management of joint forests, parks, or recreational areas, or for the development, use and management of water and related natural resources.

It can be seen that as a coordinator of the federal agencies, the proposed commission would be considerably weaker than the body recommended by the Survey Commission, lacking the functions of directions of surveys, budget control, and actual operation of the completed projects. But a commission created by compact need not necessarily be a weak organization. Three members of the Survey Commission, Senator Milton R. Young of North Dakota, Congressman Clifford R. Hope of Kansas, and Dean H. T. Person of Wyoming, dissented from the organizational recommendations of the Survey Commission's report and urged a coordinating agency established by a compact to which the basin states and the federal government are parties. But the minority of the survey commission cannot be said to have simply approved the draft compact of the Missouri River States Committee. While they made no specific recommendations for the powers that might be given to a commission set up by compact, they concurred in the recommendations for very broad powers for any such agency, and stated that the precise definition of its duties and powers could best be worked out by agreement.[76b]

76b. Missouri: Land and Water (1953) 12-14.

Objections to the Compact Approach

Legal Objections. The majority of the Survey Commission stated seven reasons for rejecting the federal-state compact as a solution to the problem. In the first of these they expressed the belief that such a compact would raise unsolved constitutional questions which would require prolonged litigation for final determination: "Historically, compacts have been concerned largely with problems of interstate relationships. We are of the opinion that a compact among a selected group of States and the Federal Government embarks upon a field largely unexplored in the courts."[77] It is true that the Constitution makes no mention of such an arrangement between the different levels of government. But we are not completely without precedents.[78]

In several instances, states with a common problem have established planning and coordinating agencies by interstate compact. The principal agencies so organized are the Port of New York Authority, and the Bi-State Agency. These are quite similar, and represent interstate solutions to the problems that arise when a great metropolitan area covers parts of different states. The Port of New York Authority, established in 1921 by New York and New Jersey,[79] is a corporation that plans, constructs, and operates terminals and transportation facilities and deals primarily with transportation problems and facilities in New York City and Newark, N. J. The Bi-State Agency, set up by Missouri and Illinois in 1949,[80] is a similar agency for the greater St. Louis area with much the same powers with regard to transportation as the Authority, but in addition, it has general planning powers over problems dealing with sewage, drainage, coordination of streets, highways, water supply, sewage disposal, recreation and conservation facilities, and land use pattern in a six-county area.

Many of the compacts by which the waters of interstate streams are divided are self-executing in that they require only adequate basic data on stream flow for the state water officials to apportion among state water users the shares of the signatory states. In other cases, because of the amounts of water involved, the presence of numerous tributaries, varying proportions allotted under different conditions of stream flow, or the necessity for storage of water to meet downstream commitments, the states have formed commissions for the control of the rivers. In each of these instances the states, recognizing the interests of the federal government in the river and in the problems with which the compact is concerned, have provided for federal representation on the commission.

In 1939 Colorado, New Mexico and Texas established the Rio Grande

77. Missouri: Land and Water (1953) 10.
78. Zimmermann and Wendell, The Interstate Compact Since 1925, is largely devoted to discussion of the constitutionality of such a compact, and some of the arguments there set forth are reproduced here.
79. (1921) 42 Stat. 174.
80. P.L. 743 81st Cong. 2d Sess. (1949).

Compact Commission, whose chairman is a non-voting federal member designated by the President of the United States.[81] The compact apportions the waters of the Rio Grande and gives the Commission, by virtue of its powers of collecting data and making recommendations, control of the flow and division of the waters of the river. The eight states forming the major part of the Ohio River basin have similarly established an organization consisting of three commissioners from each state and three appointed by the President, which has wide recommendatory and some enforcement powers relating to stream pollution.[82] The Upper Colorado River Commission is an administrative agency set up to administer the Upper Colorado River Basin Compact,[83] which apportions the water of the river among the five states of that region. On this Commission a representative of the United States is the presiding officer of the Commission and entitled to the same powers and rights as the Commissioner of any state. The Commission is an operating body in full control of the flow and use of the river by virtue of powers delegated to it in the compact. While not specifically designated as a planning agency, it serves some planning functions and makes recommendations to the agencies developing the river and to Congress.

The federal government is a participant, in a sense, in all compacts since they require congressional consent. The federal government participated in the negotiations leading up to all of the western water compacts. In each case involving these the President has designated a representative of the United States to participate in the negotiations between the states and this representative is usually named as chairman of the negotiating commission. In several instances Congress has specifically required federal participation in the negotiation of a compact as a condition precedent to congressional approval of the completed agreement.[84]

The United States has not signed as a party to any of these compacts. While the Constitution does not expressly mention agreements between the United States and a state, the federal government has made such agreements in the past and their validity has received judicial recognition when a function or power of the United States was furthered.

In the case of *Searight v. Stokes*,[85] decided in 1845, the Supreme Court had before it such an agreement, in the form of a proposal by state legislation and an acceptance by congressional act. The federal government had constructed the Cumberland Road, but found the maintenance and upkeep difficult and expensive. The states through which the road ran proposed, by state legislation, to take under their care the road, maintaining it by tolls, and Congress passed a law declaring the assent of the United

81. (1939) 53 Stat. 785.
82. (1940) 54 Stat. 752.
83. (1949) 63 Stat. 31.
84. (1942) 56 Stat. 736, P.L. 572, 82nd Cong. (1952).
85. 3 How. (U.S.) 149 (1845).

States to these statutes and ceding the road to the states. A dispute arose over the construction of one of these statutes and, while the validity of the agreement was not challenged, the Court, by Mr. Chief Justice Taney, stated that it saw no ground for questioning the power of the United States to enter into such an arrangement (which was designated a "compact") and the agreement was held a proper method of fulfilling the constitutional power to establish post offices and post roads.

Two extremely important precedents in federal participation in an interstate compact occurred in the final Republican River Compact[86] and in the Belle Fourche Compact.[87] These each state that the compact shall become operative only when consented to by Congress by legislation which provides that any beneficial consumptive use by the United States shall recognize, to the extent consistent with the best utilization of the waters for multiple purposes, that beneficial consumptive use of the waters wihtin the basin is of paramount importance to the development of the basin, and that the United States shall recognize, to the extent consistent with the best utilization of the waters for multiple purposes, that beneficial consumptive use of the waters within the basin is of paramount importance to the development of the basin, and that the United States will recognize any valid established use for domestic and irrigation purposes which might be impaired by the exercise of federal jurisdiction over the waters of the river. In the consent legislation Congress embodied these provisions verbatim, thus in effect making the United States a party to the agreements.

The second stated objection is that state officers serving on the compact commission would exercise supervision over agencies and officers appointed by and responsible to the Federal government.[88] Phrased differently, the argument is that members of the compact commission would, by virtue of their powers, become federal officers within the meaning of the Constitution[89] and their appointment by means other than those specified in the Constitution would be illegal. This, however, is not an objection, unless a specific compact with this feature is postulated, it is simply a guidepost to the draftsmen of the compact. In the deliberations of the Survey Commission, Commissioner Holum of South Dakota pointed out that since two quite different demands are made—coordination of the federal bureaucracy, and creation of a local voice in the program—different methods might be used to accomplish the two objectives. And the dissenting members of the Survey Commission recognized that they had this key, although they were not explicit as to its use. They state: "Also we can foresee that Congress, in the legislation authorizing compact negotiations, may wish to except certain matters relating to purely Federal functions and responsibilities from the jurisdiction of the State-appointed members

86. (1943) 57 Stat. 86.
87. (1944) 58 Stat. 94.
88. Missouri: Land and Water (1953) 10.
89. Art. II, Sec. 2.

(of the Compact commission). In any event, there will be opportunity in the negotiations to invest the proposed body with the necessary delegations of authority from both Federal and State sources to do its work properly."[90] In other words, this constitutional hazard may be avoided either by proper delegation of authority to state officers or by eliminating state control of certain features of the organization. It is not necessary, if the states are given a strong voice in the managment of the commission, that all powers of the commission be watered down to the extent that appears in the draft compact prepared for the Missouri River States Committee. On the other hand, it is not necessary to adopt the opposite extreme, and if the coordinating commission is given strong powers, to relegate the states to a merely advisory capacity.

Let us examine the powers that the Survey Commission believed such a coordinating agency would have to have to see which of them may be properly handled by agents of the states. As noted above, many of the functions of such a commission would amount to no more than making recommendations to Congress. The general planning and programing functions are of this nature, as are the studies that would be made, and the advice that would be given in relation to the proper budgeting of resource control activities. Any citizen, supposedly, may make a recommendation to Congress and the legislative precedent for review of federal projects by the states is found in Section 1 (a) of the Flood Control Act of 1944.[91] Insofar as budget procedures and authorization procedures would be changed, the mere routing of a federal agency's request through such an organization as an added step prior to submission to the Bureau of the Budget seems to raise no constitutional problems.

In regard to the operation of the completed projects by such a commission, it certainly seems that here the states, in control of the distribution of water in accordance with state created priorities, and affected materially by operations for power, flood control, and navigation, have sufficient interests to justify a joint voice in the matter of water releases. Similar composites of federal and state interests have never been questioned. Examples are the joint boards established in motor carrier cases by the ICC[92] and in certain types of power hearings by the FPC.[93]

It was also recommended that a coordinating commission should have general authority and responsibility for cost sharing policies. Insofar as this amounts to the establishment of policies relating to sharing the costs of projects and to equitable bases for payments in lieu of taxes, these powers also seem purely recommendatory since no action could be taken without Congressional changes in the substantive law. The negotiation of cost sharing agreements and contracts with states, districts, groups, and

90. Missouri: Land and Water (1953) 13.
91. Supra n. 52.
92. 49 U.S.C.A. 305.
93. 16 U.S.C.A. 824h.

enterprises would again seem to be a matter of joint interest justifying joint participation, and to a large extent the Commission would simply be a forum for negotiations.

One recommendation was for the actual making of cost allocations among the various purposes of a project. Since the portion of the total cost of a federal project that is allocated to navigation or flood control is nonreimbursable, and since the division of remaining costs between power and irrigation features will have a material effect upon the amount of reimbursement and the rates for these services, it can be said with some justice that the amount of federal money that is reimbursable and the rates at which it will be reimbursed are matters of federal concern alone. One or two other powers may also be claimed as purely federal activities. It is contemplated that such a commission would have actual direction and supervision of future investigations and surveys, would set up procedures for the uniform evaluation of costs and benefits, and would have authority to make some allocations of planning funds among the various agencies.

As to this last group then, these functions must either be excluded from the authority of the state members, or the state members, by some proper delegation of authority, be regarded as federal officers for these purposes.[94] Exclusion could be made by providing that state members could have the right to discuss and recommend on certain of these matters, but that the federal members would have the power to make the decision without reference to the position of the states.[95]

Other Objections. In addition to the above two legal objections, or rather questions, the Survey Commission made four criticisms of the compact approach on policy matters, and one that may be called a practical objection.[96] Both the third and fourth objections of the majority of the commission raise related policy questions. The third is based upon the premise that the development of the basin is so important to the federal

94. An exhaustive list of situations in which state officials exercise authority for and on behalf of the federal government and the legal questions arising is found in Kauper, Utilization of State Commissions in Administration of the Federal Motor Carrier Act (1935) 34 Mich. L. R. 37, 46-49, 70-80. "The question has arisen in a number of cases, and in all of them the Court has either contented itself with the simple statement to the effect that the National Government might properly clothe state officers with federal authority, or it has unquestionably assumed that to be the case. It seems clear from these cases that the Supreme Court considers the question well settled in favor of the constitutionality of the practice. Undoubtedly the Court has been influenced by the fact that this practice dates back to the foundations of our government and in itself constitutes a practical interpretation of the Constitution not lacking in persuasive appeal." Ibid., 72. See also Governmental Techniques for the Conservation and Utilization of Water Resources (1947) 56 Yale L. J. 276, 297-303.

95. Compare the bill prepared by the Bureau of the Budget, based in large part on the findings of the President's Water Policy Commission, made available to the 83rd Congress by President Truman. 99 Cong. Rec. 454 (1953), but never introduced. By that bill a state-federal coordinating commission would be established, but all of its powers would be vested in its chairman, a federal officer, who might act only after consideration and recommendation by the whole commission.

96. Missouri: Land and Water (1953) 10.

government that it cannot be shared. We are told that because of the national need for the agricultural resources of the basin, many of which are undeveloped, the federal interest cannot be delegated to state and local interests, that the integrity of the nation's responsibility must be maintained by the administration of federal programs by federal officers only, responsible to the President and to Congress. It seems strange to find residents of the basin thus arguing for a colonial policy under which the development of the area is regarded as secondary and incidental to the interests of the "mother country." The fourth views the outlay by the federal government of 70% of the funds needed for complete prosecution of the Pick-Sloan Plan as requiring that the states be denied an effective voice in the development, even though they more closely represent the people who will directly contribute within the next six years $402,472,000,[97] and who will be eventually called upon to reimburse three and one-third billion dollars[98] to the federal government through power, municipal water, and irrigation revenues. This seems to be based upon some inarticulate theory that the federal government can be regarded as the majority stockholder in the enterprise, whose holdings require the exclusion of the minority shareholders from representation on the board of directors. This corporate theory might be made the basis of an argument in negotiations for a compact, that only minority representation and voting strength should be accorded to the states, although a working partnership, where a voice in the management is not necessarily tied directly to the proportionate investment of the partners, might be a better analogy.

The fifth reason given for rejecting a federal-state commission, while phrased in terms of "democratic processes," is self-contradictory and is a flat rejection of the principles of democracy as applied to basin development. It is found objectionable that state representatives on such a body would represent a limited and sectional interest, that "proper" decisions would be difficult, that the commission would be predisposed to the pressures of local interests. The implication is that such a state of affairs would be shocking, and should not be tolerated—yet it exists today in municipal and county governments, state legislatures, and in Congress. Similarly, the sixth objection is a rejection of the values of representative government: "The proponents of the compact device have made much of the popular demand for local participation in the development of the basin. They contend that this demand would be satisfied by a Governor's representative in the basin agency. We believe that the people, through their local districts, associations, and organizations, wish to speak for themselves. They have a better understanding of those issues and problems and should have the opportunity to take a more active part in the development program." In the first place, this makes an assumption that the state members on such a commission would be the representatives of the

97. Ibid., 84.
98. Ibid., 107.

governors, although if precedents were followed, the compact would provide that such members would be designated in accordance with the laws of the states they represent, and the manner of their selection would be up to the several legislatures. Legislative confirmation might be required; the chief water official of the state or the head of the natural resources board might serve ex officio; conceivably provision could be made for the direct election of such a representative by the people. Secondly, this objection shows a distrust of the representative that seems hardly warranted. No reason is suggested as to why, in this field, local differences cannot be settled at the local level, or as to why the assumption is made that these representatives will not foster the interests of those they represent and will be uninformed, or why it should be assumed that the people will prefer the privilege of speaking (through district, association or organization *representatives*) at a public hearing in the hope of influencing a decision rather than the right to have their state representatives vote decisively on the issue.

Under their seventh heading, the Survey Commission group several "practical" objections: The difficulties and time consumed in reaching an agreement on the terms of the compact and in securing its ratification loomed large to them, negotiation would undoubtedly require years, ratification would take time if it could be accomplished at all. As if this were not enough, it is assumed that probably the resulting compact could not meet changing conditions and the whole dreary process would have to be repeated in renegotiations. Whether such fears are justified is of course a matter of opinion.

Conclusion

A strong argument can be made that in the light of the current political climate the compact approach not only has an excellent chance of speedy fruition, but that it is the only method that gives any promise of quick action. There can be little doubt that the failure of many of the other proposals to gain acceptance has been due to the resistance of the people of the basin and their congressional representatives. On the national level, President Eisenhower specifically endorsed this approach in his major campaign speech on resource development[99] and in his message to Congress on the state of the union.[100] The two Republican Congressional representatives on the Survey Commission voted for the compact approach. On the state level, the governors of the states in the basin have endorsed a preliminary draft of such a compact, and while the draft is entirely tentative, and the approval solely for as a basis of discussion, it does indicate the governors are sympathetic to such an approach or solution. At the grassroots, the Survey Commission was almost indefatigueable in the holding of hearings up and down the basin, in every state, and from the record the conclusion seems inescapble that the people, and their

99. Seattle, Wash., Oct. 6, 1952, New York Times, Oct. 7, 1952, 22.
100. 99 Cong. Rec. 782, Feb. 2, 1953.

state organizations, will demand a real voice in the future development of their resources.[101]

The mechanics of the compact approach are simple. Congressional consent in advance to interstate compact negotiations is traditional. By it no irrevocable step in taken, since the draft produced in the negotiations is subject to final ratification. All that is needed to give the impetus that might produce truly comprehensive, optimum development of water and land resources through the joint efforts of the federal government and the states is the enactment of the following bill:

> *"Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that:*
> "The consent of Congress is hereby given to the States of Colorado, Kansas, Iowa, Minnesota, Missouri, Montana, Nebraska, North Dakota, South Dakota, and Wyoming, or any five or more of them, to negotiate and enter into a compact with each other and with the United States of America, providing for means for the attainment of the conservation and development of the land and water resources of the Missouri Basin, through a basin-wide, comprehensive program for the unified planning, development and operation of those resources, integrating the resource development programs and operations of agencies of the United States and of the States, and for securing effective coordination and cooperation between the States and between the United States and the States: *Provided,* that existing compacts between the States and decrees of the United States Supreme Court relating to any of the waters of the Missouri River or its tributaries shall be fully recognized: *Provided further,* that any compact negotiated pursuant to this act shall provide, that the use for navigation of waters arising in States lying wholly or partly west of the ninety-eighth meridian shall be only such use as does not conflict with any beneficial consumptive use, present or future, in States lying wholly or partly west of the ninety-eighth meridian, of such waters for domestic, municipal, stock water, irrigation, mining or industrial purposes.[102]
> "Sec 2. The President is authorized to appoint a commissioner to represent the United States in such negotiations, who shall make report to the President and to Congress of the proceedings and of any compact entered into.
> "Sec. 3. Any such compact shall not be binding or obligatory upon any of the parties thereto unless and until the same shall have been ratified by the Legislatures of each of the States whose assent is contemplated by the terms of the compact, and by Congress."

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101. A cursory review of the extensive record shows that of the more than 300 witnesses who expressed an opinion on the need for greater coordination in resource development, about 200 were in favor of strong local representation on the coordinating body.

102. The second proviso states the substance of the O'Mahoney-Milliken amendment to the 1944 Flood Control Act, sec. 1(b), 58 Stat. 888, 33 U.S.C.A. 701-1. In the original bill for consent in advance legislation for a Columbia River interstate compact it was provided that the use for navigation and hydroelectric power should be subservient to consumptive uses, and that power generated should be allocated to meet the needs of each state. These were stricken at the suggestion of the Secretary of the Interior, Sen. Rep. 1841, 82nd Cong., as more properly the subject of negotiations. However, the O'Mahoney-Milliken principle is so firmly engrained in Missouri basin law, see 60 Stat. 641, 64 Stat. 163, that its mandatory inclusion in a compact seems justified.